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NATURE MAGAZINE

FEBRUARY 1926

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$500 to $1,200 may seem like a lot of money to get from a single acre in one year, but it is easy to make these big profits from STRAWBERRIES, when you have the right plants and the right method of growing them. We supply you with both. Here's proof that others are making these profits and more. You can do it too with Kellogg Thorobred Plants grown the "Kellogg Way."

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G. M. Hawley of California sold $3,000 worth of berries from 2 acres.

W. R. Randall of Illinois made at the rate of $1,900 per acre.

I spent thirty years learning how to make berry plants produce these big money crops. This very berry book that I send to you FREE tells the whole story. In one hour with this book you can learn what it has taken me thirty years to learn. Get it and read the letters from beginners who are making much more than $1,200 per acre by my proven method. Your name and address on the coupon or postal card will bring this valuable berry book to you FREE.

Just Out

Two Brand New Strawberries

Of course, you will want to know all about these two wonderful new strawberries I am offering for the first time this year.

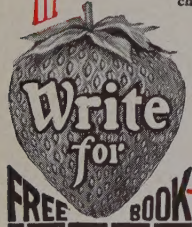
"Early Bird" is the earliest strawberry the world has ever known. A product of Rockhill, the famous $50,000 Everbearer.

"Parcell" is the other new one. A strawberry that is different—different in size, shape, color and flavor—and it has a record of 9,000 quarts per acre.

My book pictures these two brand new varieties in natural colors and tells where they came from, who brought them and how they were named. Get the book and read all about them.

Kellogg's "Spare-Time" Profit Club

This year I am also offering a series of big Cash Prizes to those who grow the biggest crop of berries under my proven method I call this contest Kellogg's "Spare-Time" Profit Club and it offers you two opportunities to make money;—one from your crop of berries and an equal chance to win one of the big Cash Prizes. This contest is open to all. Send for my book and find out all about this plan. No Special Charge for membership,— no charge for the book and plan.



I will send you my Berry Book and complete information on how you can make these big profits — all FREE for the asking. Send the coupon below or a post card NOW and learn how thousands of others are making $500 to $1,200 per acre—the "Kellogg Way."

(22)

One Acre of Kellogg Strawberries Will Make More Money Than 40 Acres of Common Crops—and It's Easy

Big crops of berries and big profits come easy, when you know how.

More than 100,000 growers who have sent for my Free Berry Book are now producing big crops and big profits the "Kellogg Way." These folks are just ordinary men and women like you,—but they had the ambition to make more money—so they sent for my book.

If you have a piece of ground large or small that is paying you only an ordinary profit or no profit at all—then don't wait. Send for my book at once and find out how you can make $500 to $1,200 profit per acre — or $100 to $300 profit from an ordinary sized garden. It tells all about the "Kellogg Way" of growing berries for profit, from beginning to end, and gives the actual experiences of others who are making these big profits. Remember, the book is FREE.

Kellogg's EVERBEARING Strawberries

Kellogg's famous Everbearing Strawberry Plants yield a constant flow of big luscious berries from June until November. Heavy frost does not affect their fruiting. These big quick money-makers produce two big crops a year from the same plants. A big money crop in the Summer and another bigger money crop in the Fall. Just think of the money you could make selling big, sweet, fancy strawberries when the frost is on the pumpkin and the corn is in the shock. These Fall berries are in great demand at top-notch prices. Read what these folks have done.

"I picked an average of 2 quarts from each Kellogg Everbearer the first season and sold the berries at 30c per quart."—Mrs. Dora Snow, Neb.

W. L. Forbes of Vermont sold $1,500.00 worth from one acre.

Howard Stuntz of Oklahoma picked $1,363.20 worth from only one-half acre.

A. W Denbo of Indiana made at the rate of $2,000 per acre the first year the plants were set.

J. T. Taylor of Oklahoma bought $18.00 worth of Kellogg Everbearing Plants and sold $275 worth of berries.

No room for more reports here—but plenty more in my Free Berry Book. Send for it today—read it and see for yourself how thousands are making these big profits from Strawberries. Also tells how to get big crops of Raspberries, Blackberries and Grapes.

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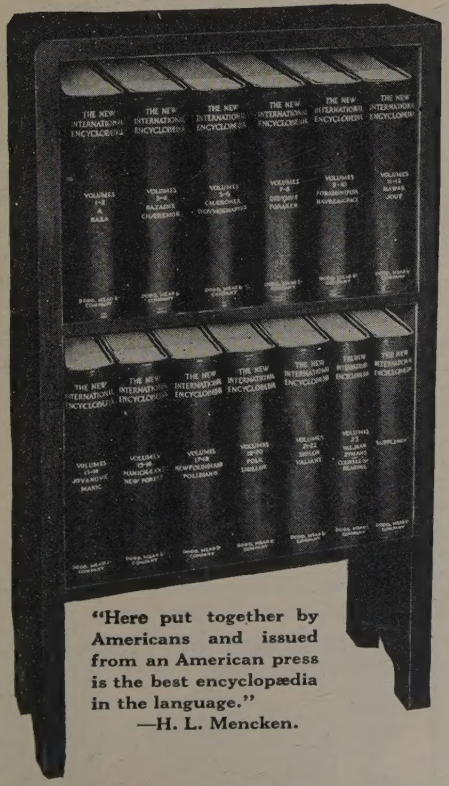

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The human losses in the great war are counted in millions. But let us not forget that eight million horses laid down their lives; that nearly an equal number of mules paid the supreme sacrifice; that thousands of dogs, pigeons, camels and other animals also served and died—mutely, valiantly. It was not a war of machines only, much public misapprehension to the contrary notwithstanding. Our dumb fellows served as well.

Mr. Baynes was at work even up to the day of his passing on this volume. It is a vital contribution to war literature. It ranks with those few of our books and plays that show us the glory of war that is not. It brings tears to the eyes at the telling of instances of animal suffering and of animal devotion in the world conflict. R. W. W.

The Carolina Coast

"The glory of the Carolina coast is comparatively little known except to those favored few who dwell within its magic influence and wondrous beauty and worship daily at its shrine," says the foreword to *Glories of the Carolina Coast,* by James Henry Rice, Jr. The volume is published by the R. L. Bryan Company, Columbia, S. C. The volume is unique in its field—one not before touched in any comparable form. It treats with the topographic features of the country, its scenic charm and the wild life that abounds in it.

Museum Taxidermy

There have been few developments within the past few years in connection with natural history museums as significant and valuable as the museum habitats. The artistry that is now going into the presentation of these groups depicting episodes in the life of the wild is remarkable. The groups of today are things of beauty in content and things of high educational value in their completeness.

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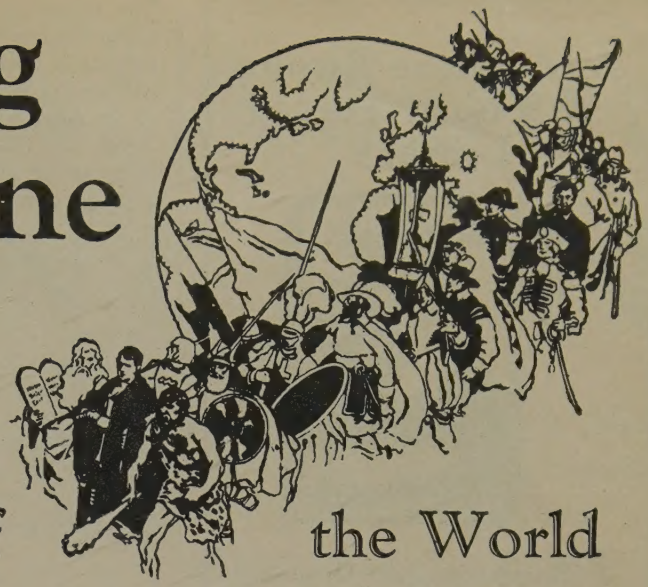

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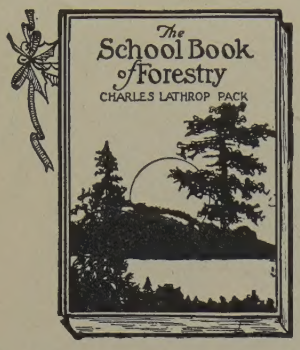

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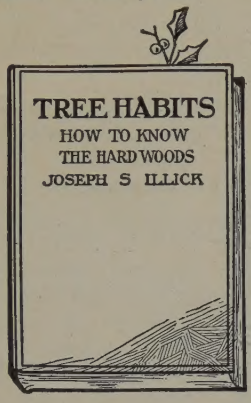

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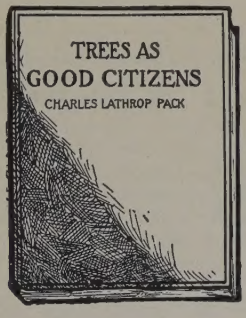

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The importance of this detail of habitat group construction gives full warrant to the publication of *Taxidermy and Museum Exhibition* by John Rowley from the presses of D. Appleton and Company, New York. Frank M. Chapman, Curator of Ornithology at the American Museum of Natural History, contributes a preface of endorsement.

Mr. Rowley, whose achievements in the field of museum taxidermy are notable, states that the object of this volume "is to contribute to the advancement of museums and museum work." It is designed to help the beginner, to suggest ways of meeting problems and to guide him in gaining experience. The volume is a practical handbook covering the many means that contribute to the performing of "museum magic"—the habitat group.

From the Smithsonian

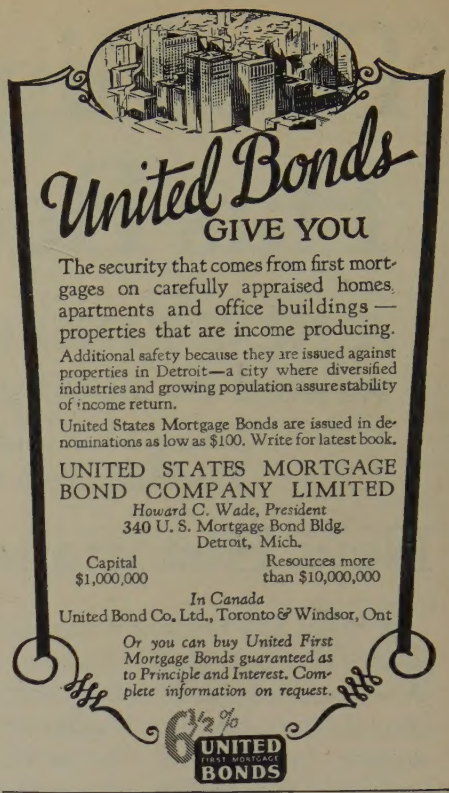
Among the recent separate pamphlets of the Smithsonian Institution are: Herluf Winge, a biography of the Danish scientist, by Th. Mortensen; A Modern Menagerie, more material about the National Zoological Park in Washington, D. C., by N. Hollister; Nests and Nesting Habits of the American Eagle, by Francis H. Herrick; The Breeding Places of the Eel, results of research by Johs. Schmidt; Orchid Collecting in Central America, by Paul C. Standley; A Botanical Trip to Ecuador, Peru and Bolivia, by A. S. Hitchcock, and an analytical report on Cankerworms, by R. E. Snodgrass.

From Field Museum

Nature students whose special penchant is botany will find the bulletins along this line issued by the Field Museum of Natural History in Chicago of considerable interest. The list of botanical leaflets cover the subject of figs, coco palm, wheat, cacao, a fossil flower (cycad), cannon ball tree, spring wild flowers, spring and summer wild flowers, summer wild flowers and autumn flowers and fruits. The first six named are available at ten cents each and the last four at twenty-five cents. They are all interestingly written and attractively illustrated.

More State Parks

"A state park every hundred miles" is at once the slogan and the goal of the National Conference on State Parks. It is likewise the title that the conference gives to an attractive little booklet recently issued and reporting on the progress of the work toward the aim it has set. With 43 States interested in an active way in this work, compared with 20 in 1921, the conference has accomplished much under the leadership of Judge John Barton Payne and Stephen T. Mather, and with the effective support of many others.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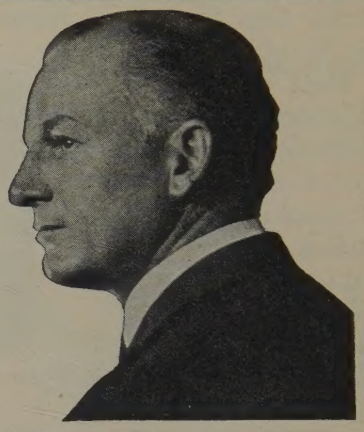

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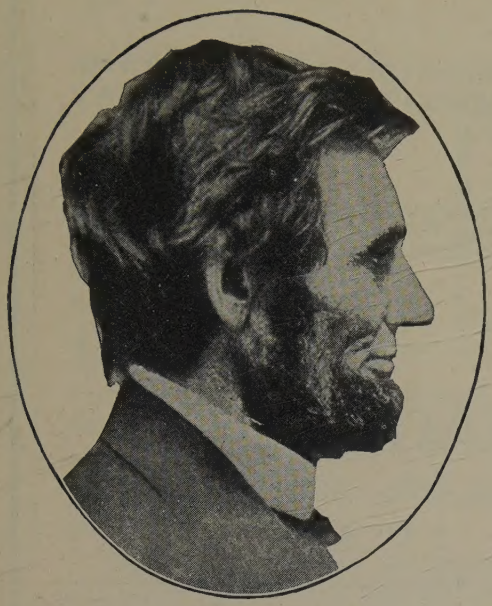

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The great private collections have generously yielded their most treasured items, the records of the War Department have been freely opened, and the leading public libraries have contributed to the monumental task.

Out of this wealth of new, never-before-published material, Ida M. Tarbell, the famous historian and great authority on Lincoln, has woven the enthralling story of Lincoln's life. Fiction was never so fascinating. Here is a moving romance that grips us from the first page to the last; that brings us closer to Lincoln than we have ever been before—not the Lincoln of idealized history, but the homely, whimsical man who swapped stories with a judge in a rural court room, who set up in business as a country storekeeper, and failed, who once prepared to fight a duel, who received the delegation that came to announce his nomination for the Presidency in his shirt sleeves.

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NATURE MAGAZINE

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ARTHUR NEWTON PACK, Associate Editor
RICHARD W. WESTWOOD, Assistant Editor
EDWARD A. PREBLE, Consulting Naturalist
R. BRUCE HORSFALL, Artist

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Nature Calendar

FEBRUARY

> "More soft than press of baby lips
> They fleck the russet willow slips
> Before the blue birds hither wing
> These first, faint footfalls of the spring."
>
> —Arthur Guiterman.

In sheltered, sunny nooks pussy willow buds are opening.

The great sap tide is beginning to surge. At this time more sap flows down the tree than up.

The white birch trees are shaking their catkins, which send forth showers of little winged seeds to pepper the snow. Under a magnifying glass each seed reminds one of a tiny bird with outspread wings.

Skunk cabbage flowers will be out by the twenty-second.

The continual freezing and thawing which is taking place, causes much heaving in clayey soils and the consequent injury of many plant roots.

Robins, bluebirds and song sparrows are returning to their summer haunts.

Trees are filled with flocks of squeaking grackles just arrived from the south.

The kingfishers have left Dixie to try their skill in northern streams and ponds.

The Chinook or Sacramento salmon are beginning their run up the Columbia River.

Regulus, Star Royal and ruler of all the heavenly host, now reigns in the eastern sky.

Capella, nearest to the north star of all first magnitude stars, is now high in the southwestern sky.

Every new week brings us nearly sixteen more minutes of light from our nearest star, the sun.

The young beavers, who are monogamists, are selecting their mates for life.

Snowquakes are often caused by gray squirrels burrowing in the snow after seeds and nuts.

The tracks of the red fox in the snow are doubled. Courtship and mating are taking place.

Frozen toads and frogs are thawing in their frozen mud burrows. It may be another month before some of them hop.

A bright sun on a field of snow means frosty weather, a late spring, and that the slumbers of the groundhog will be prolonged. Absence of snow and a cloudy sky depict an open winter and often bring the groundhog from his hole as early as the first of February.

Some flowers pass the winter as big sleeping buds called bulbs.

Red-winged blackbirds have returned from Florida where many of them have been spending the winter.

The common codfish is still engaged in its winter spawning, during which each fish liberates nearly three million eggs. Most of these are eaten by other sea fauna and by birds.

In early spring when food is scarce the woodchuck lives on his great store of fat.

On mild days swarms of lively midget snowfleas forsake their feeding shelters beneath moss and lichens to exercise upon the snow.

Now is the time to collect the curious stick-covered basket cocoons of the bag worms, frequently found on larch trees. A dozen or so placed in a box papered with bright colors will bring an interesting surprise in the spring.

Try putting your face close to the thin black ice over a brook and look for the stone builder or caddis (an insect) crawling over the stream bed, dragging his stone hut or log-cabin house along with him.

Following a warm spell, the swelling buds and catkins on birch and alder give a brownish tinge to the hillsides where these shrubs predominate.

The red triton, seeming like an inhabitant of tropical streams transplanted to cold northern waters, now follows the spring currents from far in the depths of the hills, where it has wintered, out to the muddy woodland pools to breed.

In the northern states, boys skating on flooded cranberry bogs or meadows may see through the thin ice the small brook pickerel, which likes to winter in such places, safe from the attacks of larger species.

By the latter part of the month, in the less elevated sections of the middle states, frogs of several species may be active. Among the earliest are the wood frog, the common hyla or spring peeper, the swamp tree frog, and sometimes the leopard and pickerel frogs. The latter, however, are more likely to be still lying quietly at the bottom of some clear spring.

Prepared for Nature Magazine by the Cleveland Museum of Natural History

My Dog Pat

By Gregory L. Oliver

NATURE MAGAZINE

Vol. VII FEBRUARY, 1926 No. 2

To climb the trackless mountains all unseen.
With the wild flock that never needs a fold;
Alone o'er steeps and foaming falls to lean;
This is not solitude; 'tis but to hold
Converse with Nature's charms, and view her stores unroll'd.
—Lord Byron.

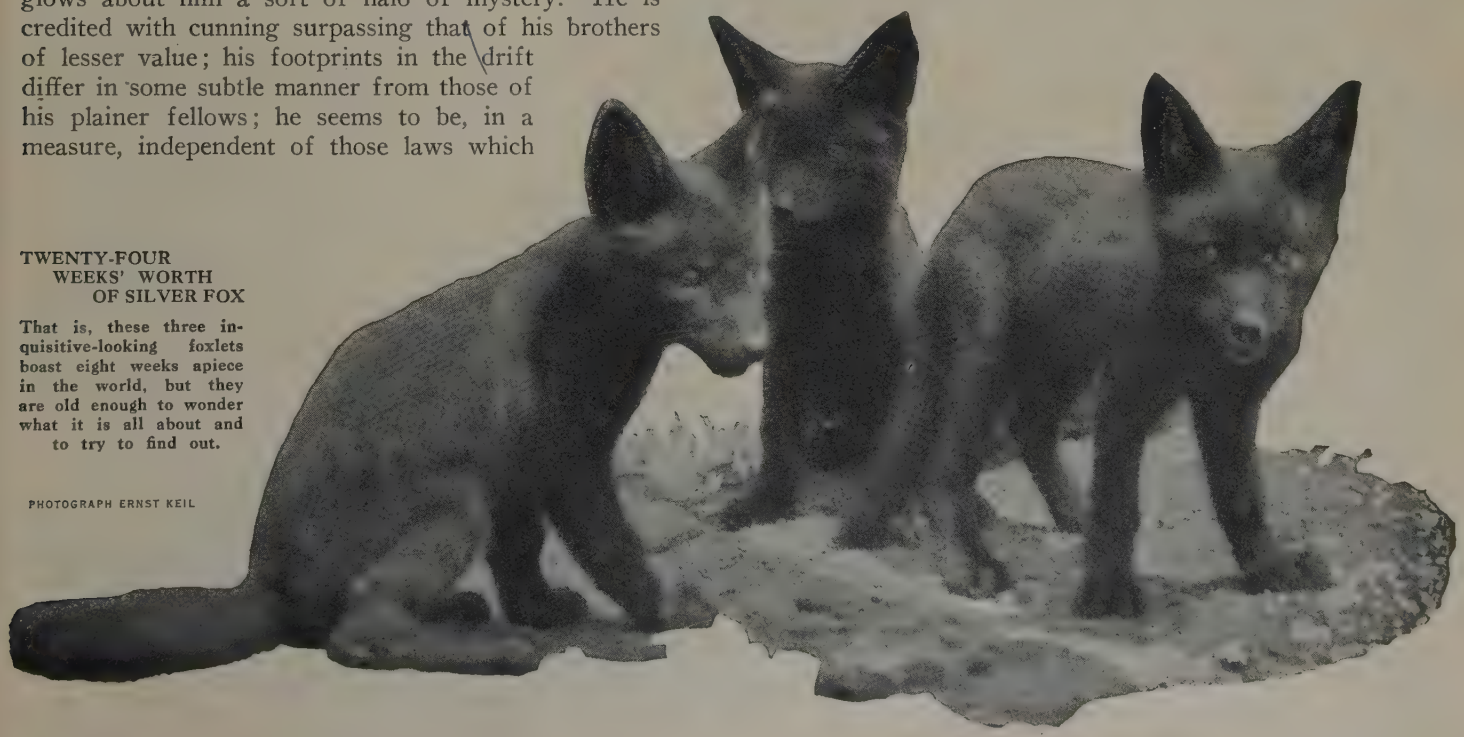
SILVER FOX, PRINCE OF FUR-BEARERS

By Edward A. Preble

THE SILVER FOX—what wild animal has so thrilled the nerves and quickened the pulses of so many and various people as this shy and scarce denizen of the silent places? The richest prize of the Indian trapper; the lure that tempts the fur-trader to add to his trading stock the gaudiest blankets, the finest rifles, the most tempting luxuries, that he may beat his rivals at the game of securing the coveted white-flecked skin; the fluffy silk-lined scarf, cunningly displayed to tempt the fair buyer, the envy of her less fortunate sisters; the ill-concealed vanity that goes with its wearing.

Scarcely inferior in beauty and value to the kingly sea-otter, the silver fox has been the subject of myriad tales told in the tepees and log-cabins of the hunters of the far north. Though well they know his origin, yet ever there glows about him a sort of halo of mystery. He is credited with cunning surpassing that of his brothers of lesser value; his footprints in the drift differ in some subtle manner from those of his plainer fellows; he seems to be, in a measure, independent of those laws which fetter the movements of foxes of the more common mold.

And yet the silver fox is usually only an oddity in a family of normal red foxes, a pup born with an unusual color tendency, an excess of the black element. In his extreme youth, indeed, he is scarcely distinguishable from his brothers and sisters in the litter. From his fond mother he receives the same care, the same food and training, as his fellows. When he is a few months old, however, and has put on his first winter coat, he stands out as a very different animal. The yellowish-red color of his normal relatives is replaced with coal black, each hair bearing near its tip a zone of silver. His ample brush is similarly colored, and tipped broadly with snowy white. His legs, feet, and ears are coal-black, perhaps flecked with silver. Thenceforth, because of this beautiful furry coat, his life is



TWENTY-FOUR WEEKS' WORTH OF SILVER FOX

That is, these three inquisitive-looking foxlets boast eight weeks apiece in the world, but they are old enough to wonder what it is all about and to try to find out.

PHOTOGRAPH ERNST KEIL

PHOTOGRAPH ERNST KEIL

A MATURE VIXEN

This is an excellent animal. It is interesting that the fox remains secretive despite captivity.

spent in seeking to avoid the snares and traps set in his path.

Perhaps among his nest-mates, besides the red foxes which took their color pattern from their parents, there are one or two of an intermediate stamp. Beneath they are dark like him, while on their sides and back, besides a tendency toward melanism, there appear tinges of the tawny of their parents. These are called by the hunters cross foxes, and like him, but to a lesser degree, a heavy price is put upon their heads.

Fortunate it is that Nature has laid upon the silver fox no peculiarity of track or gait that leaves a tell-tale mark. Only his color betrays him as of superior value, and as most of his hunting is done under the cover of darkness he is seldom seen by his human enemies. Thus it happens that many times the clear-cut trail left by his fellows, but attributed to him, leads to their undoing, while he lives on. So he goes his way happily unconscious of his ultimate fate, pursuing hare and grouse, and if these fail, content to garner the lesser folk of willow-fringed marsh and tangle of spruce or poplar thicket. To him all meat is good.

Perchance fortune so favors him that he passes unharmed that period of early winter when his fur is at its best, full and glossy, before the swift rushes through the needle-armed maze of raspberry patch or prickly tangle of wild-rose thicket have cut from the glorious mantle of his neck and shoulders the lustrous fluffiness which determines its value. After this period, when experience has taught the hunters that they face the likelihood of capturing only a poor draggled remnant of former beauty, pursuit is less intensive, and each week gives him added security. So mayhap he is spared until the season of lean fare and constant pursuit is ended, and the time of plenty and of love comes on.

Then it is that he seeks a mate, and in some area of sandy soil, where the digging of a den is not too laborious, and where the ground drains easily, the pair make their home. If it so be that a wife of his own color is found, it is likely that their young brood will comprise a large proportion of pups dark like himself. But whether so or not, he hunts incessantly to assist the mother in their upraising, bringing to the den flesh and fowl in surfeit and, as the young ones gain in strength, teaching them by degrees to overcome their prey alone, as did his parents for him. And so with the progress of the seasons comes his release from domestic cares and again the time of ice and snow, and of the fullness of his beauty.

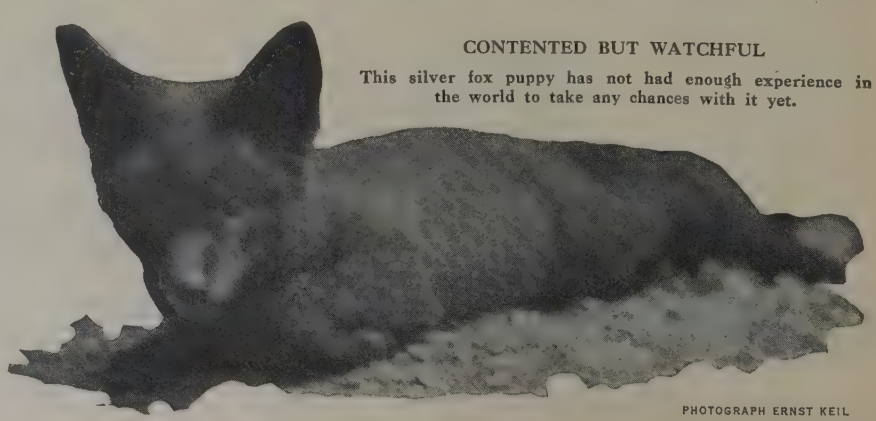
Some day, in that dark and lean time, while trying to glean from that white desolation enough of food to keep life pulsing, he puts his foot into the cruel trap, and ere long the dusky hunter, exulting in the prospect of long-sought wealth, mercifully puts an end to his suffering. The life which he has so cunningly preserved and bravely defended is taken from him, and the beautiful coat which has proved his undoing is stripped from his lithe body and starts on the mission appointed for it by vanity and avarice.

PHOTOGRAPH U. S. BIOLOGICAL SURVEY

A WELL-FORMED FOX

With his superb silver flecked coat, his coal black ears and white-tipped brush, even captive he is beautiful.

By the medium of the moccasin telegraph the fame of the fortunate hunter spreads, and, if the rivalry in that section be keen, runners from the competing traders visit the lowly camp, each seeking the prize. Perhaps at one stroke the hunter equips himself and his family with clothing sufficient for a year's wear, besides acquiring some long-coveted gear, whaleboat, repeating rifle, or what-not. From here the skin passes through other hands, each one compounding its value, until at last, having served to enrich each successive owner, it makes its final appearance in scarf-like form adorning the shoulders of some fair devotee of fashion. Needless to say, the price paid by its ultimate possessor is al-



CONTENTED BUT WATCHFUL

This silver fox puppy has not had enough experience in the world to take any chances with it yet.

PHOTOGRAPH ERNST KEIL

most beyond the comprehension of the poor hunter who braved the bitter cold of the subarctic winter to outwit its original and rightful owner.

It might be supposed that a pelt on which such value is set must be good for many seasons' wear, but truth forbids such assertion. The same fragile softness that made it yield to the rasp of tangled thicket, while on the back of its original wearer, causes it to deteriorate all the more easily now that its life is gone. A season or two of careless handling and exposure to alternate heat and cold, to rain and blistering sun, since the ruthless wastefulness of fashion decrees that furs shall be worn both in their normal season and under the burning sun of summer, soon bring its reign to a close. Its glory is departed.

A FINE EXAMPLE OF A SILVER FOX PHOTO U. S. BIOLOGICAL SURVEY

In the heyday of fox-farming it was claimed a pair of such animals were worth $35,000 for breeding.

Such, in brief, is the history of the animal that has done its full share in the development of the wilderness. With its kindred of the wild, the beaver, the marten, the otter, it was the lure that led the trapper into the uttermost parts of the wilderness. That hardy pioneer was followed by the trader, the missionary, the explorer, the farmer, and the manufacturer. Nor has its mission always been in the paths of peace, for many a bloody or even fatal quarrel has been waged over the rare pelt by hunter or trader.

In the early days of the American fur trade, the rarer furs, like the silver fox, found their principal market in the courts of Europe and the palaces of the Far East, while the more modest demands of our own people were satisfied by the more useful deerskin or the lowly raccoon.

In its natural state the silver fox, though only a color-phase of the common red species, is by no means found throughout the full extent of that animal's habitat. The American red fox, broadly speaking, ranges from the Middle States northward to the limit of trees in northern Canada. Through most of its range in the United States the dark phase is absent or very rare. Over Canada it is of more frequent occurrence, and in certain sections a large proportion of the foxes are melanistic in some degree. The first grade of departure from the normal is the so-called cross fox. In this the deep fulvous of the upper parts, varied with black markings on the feet and ears, is replaced in varying degrees with black over most of the under parts and the legs, while the same color underlies the tawny of the back and shoulders. A still further increase of the black, flecked with white, which also replaces the fulvous portion of the upper parts, constitutes the silver phase. A still further degree of elimination of the lighter tints results in the black phase, in which all light color is replaced by a lustrous black, relieved only by a white tail tip, normal to all variations of the species. These color phases command successively increased values, excepting that the black is now in less favor than the silver, owing to the fact that dyeing the red pelt has become such an art that the genuine black fox can scarcely be distinguished from its spurious imitation. Nor is the silver exempt from counterfeits, though such are easily detected by the expert.

The rarity of the silver fox has led to extensive attempts to domesticate it. The fox-farming industry was originally developed in eastern Canada, and especially in Prince Edward Island, where the breeding of silver stock, and the gradual elimination of the less valuable color-phases, well nigh resulted in a permanent dark species.

Within the past few years the business has been made the subject of intensive study, and great improvement has been made in its conduct, both in Canada and in the United States. Large sums have been realized in this pursuit, especially by the sale of breeding stock to other prospective fox raisers, and many skins equal in luster and value to the best wild-caught foxes have been marketed. In some of these fox ranches, so called, some of the animals have so far overcome their natural wildness as to permit and even encourage handling.

Records of a hundred and fifty years ago show that the finest foxes were then worth only a few dollars, while within a few years individual skins in a raw state have brought upwards of three thousand dollars, though the average price is now about one hundred dollars. During the heyday of fox ranching in eastern Canada, about fifteen years ago, it was claimed that as much as $35,000 could be realized for a pair of the best breeding animals. Present prices of breeding pairs range from eight hundred to two thousand dollars. Fox breeding is now conducted, therefore, on a much more conservative basis than formerly, the value of the pelt properly forming the criterion of its true value.

Through special arrangement, Nature Magazine is able to present a series of remarkably interesting articles by H. W. Shepheard-Walwyn, eminent British naturalist-author. Writer of a number of Nature works, Mr. Shepheard-Walwyn calls these articles The Harmonies of Nature. The method of treatment and avenues of approach are distinctly original. The series will begin with the March issue.

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THE SCENERY OF THE ARCTIC IS EVER CHANGING

The color scheme is worthy of a master's brush, blue sky forming a striking picture when offset by the glistening white, emerald green or changing blue of the ice floes.

LAND OF THE GREAT STILLNESS

By CAPTAIN JOHAN MENANDER

Of the Explorer's Club

THERE is something fascinating about the Arctic, hard to define and still harder to describe. When one is inoculated with "Arctic fever," the germ stays in the blood, and the longing to return to the solitude of the polar vasts remains forever.

The first sight of the Arctic pack ice generally leaves a mental picture that is never forgotten. Perhaps the ship has been proceeding slowly in a dense fog. A change of wind suddenly clears the atmosphere, and the ice is revealed, scintillating in the sun. The color scheme is worthy of a master's brush. The soft blue sky is strikingly offset by the glistening white, emerald green, or changing blue of the ice floes. As one advances into the pack, the size of the individual cakes grows, and one may encounter floes that probably cover more than a square mile. The ice is far from smooth, resembling a hilly, undulating landscape in miniature, with hummocks and pressure ridges, twenty to thirty feet high. The floes are separated by leads or open channels through which the ship proceeds on a meandering course until barred at some point where the lead has closed.

If the ice is heavy, it may be necessary to stop the ship and wait until the pack separates. On the other hand, there may be "water sky" ahead, and the commander may decide to "buck" his way to some other lead that is indicated by the dark reflection on the sky from the open water.

The ice pack is ever and slowly moving, impelled by wind and current. The scenery is ever changing. Occasionally one meets fantastic icebergs, offspring of a glacier on some distant land. It has perhaps taken a century or more to form one of these gigantic ice babies from tiny snowflakes that once fell on the interior of Greenland or, who knows, on some new continent, still to be discovered in the unknown area of half a million square miles that is covered by the impenetrable ice fields between Alaska and the Pole.

The ice pack has its own characteristic fauna. Seals are seen on the floes, often in great numbers, basking in the sun, or refreshing themselves with fitful slumber. Occasionally there is a polar bear, roaming over the ice in search of his next meal. Perhaps there will be roast bear ham for dinner! Little flocks of the Arctic petrel, the fulmar, are silently following the ship, on the lookout for sea animals which are wafted to the surface by the propeller, or greedily

© PHOTOGRAPH BY UNDERWOOD AND UNDERWOOD

SLEDGING OVER THE FROZEN EXPANSES OF THE ARCTIC

This photograph is of a company of explorers under the leadership of Lauge Koch, a Dane, penetrating northern Greenland for mapping and other scientific work.

devouring offal that is thrown overboard. Solitary, snow-white ivory gulls may be seen circling in the air or resting on an ice hummock. The sea itself is teeming with plankton, minute, often microscopic, and nearly transparent representatives of the animal and vegetal kingdoms.

During thirty years of work, travel and play on the seven seas and some of the continents, I have never been to a place more interesting and enchanting than the Arctic lands. There is nothing monotonous about either life or scenery up there. Few places offer as many contrasting and changing aspects as the mysterious lands around the Pole. What especially lingers in the memory of a person whose fortune it has been to visit these enchanting regions is the great, wonderful stillness that at times prevails over the calm face of Nature.

Among the many experiences of the author of this article in sailing the seven seas, were two Swedish Arctic expeditions. One was to Bear Island and Spitzbergen and the other to Jan Mayen Island and East Greenland.

The trips were of scientific character and it was on these voyages that Captain Menander first took up study of Nature as a part of his explorations. This is the first of several articles on wild life in the lands to the north.

One moment the Arctic may show the traveler a friendly face with bright, smiling sunshine. He walks about in the balmy air, admiring and enjoying the colorful flowers and listening to the chirp of the snow bunting. A few hours later a cold damp fog that chills one through may set in and blot out the surrounding vista of towering mountain peaks and glistening glaciers. The little rivulets one finds along the beach suddenly abandon their playfulness and take on a frowning aspect. The stroller who, while the sun was shining, did not hesitate to wade through the clear beauty of a stream, shivers as he reluctantly enters the water that suddenly feels many degrees colder than while the sun was pouring warmth and cheer over the landscape. A sunny, warm day, with a temperature of 60° to 70°, may be followed by a miserable, cold day, with drizzling rain or wet snow and a howling wind that seems to penetrate to the marrow of the bones. The clothing is soaking wet; the entire camping outfit is damp. The drift wood is sour and refuses to burn. Life takes on an aspect of misery. Even the most cheerful and light-hearted of the party cannot help notice that there are twigs and leaves in the coffee, and many a stout-hearted explorer wonders why he left home for this dreary and desolate wilderness.

Fortunately we soon forget disagreeable incidents, and the pleasant moments in life leave the most vivid pictures in our minds. I shall always remember one of the most perfect days of my life which was spent on Spitzbergen. We were exploring and mapping one of the deep fjords, about a day's journey from the ship, and had been caught in a rain while crossing a bay in our whaleboat. Shortly after our landing the wind died out, and the low clouds rapidly disappeared. It was delightful to bask in the soft, warm air where I sat on a little patch of Arctic willow on the south side of the hills. In front of me was the calm, green, opaque water of the fjord, reflecting a perfect image of the glimmering white peaks that rose to four thousand feet on the opposite shore. The cold shimmering mountains farther inland were still veiled in a thin ethereal mist, transparent, but just heavy enough to transform the harshness of the outline of the cliffs into delicate, soft contours.

Words can not describe the soft blue tint of the Arctic sky that day. The transparency of the atmosphere was most remarkable. As the mist was gradually dissolved by the rays of the sun, the far-away, majestic mountains, cold and inscrutable in their snowy beauty, appeared close at hand. The peaks were sharply silhouetted against the miraculous azure of the sky. There was an immense stillness, no sound, not a breath of wind, and a great and peculiar charm rested over the picture. In the Arctic the air at sea level is as invigorating and bracing as in the mountains farther south. One feels the joy of life to the full and revels in the pure atmosphere.

Nothing that I have ever seen elsewhere can match the cold grandeur of the beauty of the scenery in Franz Josef Fjord on the east coast of Greenland. Everything there is laid out on a tremendous scale. The mountains through which this system of bays and sounds is cut tower six thousand feet above the surface of the water. The sides of cliffs are in many places perpendicular, and always free of snow and vegetation, so that the various layers of the rock formation are plainly

visible like bright ribbons in blue, red, brown, white and green tints. In many places the "eternal" ice that covers interior Greenland comes down to the water and feeds the ocean with tremendous icebergs. Hundreds of these, many twice as high as the masts of our ship, were encountered in the wider sounds. To judge the size of an iceberg one must remember that only one-ninth of its volume is visible above the water.

PHOTOGRAPH INTERNATIONAL NEWSREEL

LAND OF THE GREAT STILLNESS

This remarkable photograph was taken by Donald MacMillan, the famous Arctic explorer, and shows Sonntag Glacier.

The Arctic lands are far from a desolate wilderness, and favorable localities are teeming with life during the summer. At the end of May the warm rays of the sun melt the snow and ice on the lowlands and the beaches. Where a week or two ago everything was covered with snow, the gravelly ground is bared, merry little brooks and rills drain the ice-cold water into the bays and sounds, where the winter's ice is released from its hold on the shore. One day an iceberg drifts by, a mile or two from land, and opens a wide channel through the ice field. Next time there is an offshore wind, the bay ice drifts out to sea, and a big shore lead is then formed.

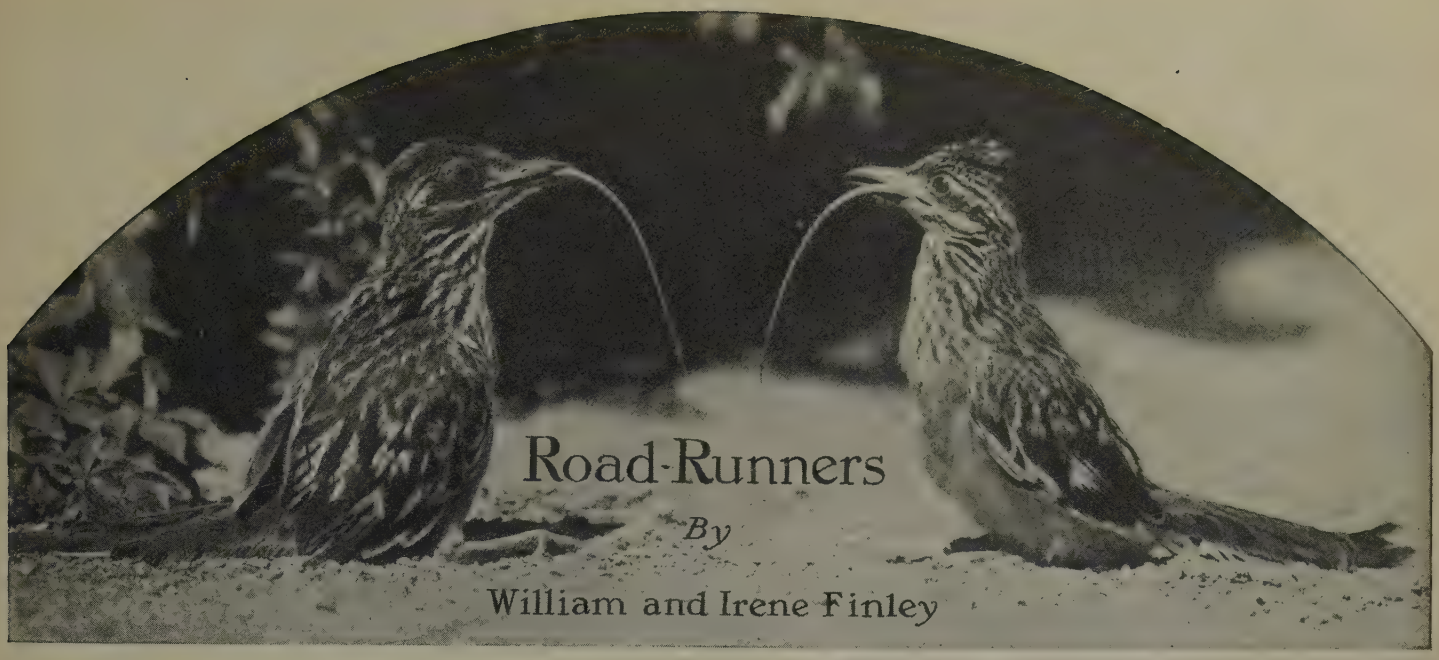
Birds return from the south to their old rookeries. Auklets, guillemots and gulls nest on steep cliffs, where the fox is unable to get at their eggs and young. Geese and ducks build their homes and raise their families on low islands, out of reach of most four-footed marauders.

Seals are plentiful on the remaining bay ice, and perhaps the monarch of the Arctic animal kingdom makes a visit on shore to vary his diet with luscious eggs or tender fledglings. On the bare spots in the valleys pretty little flowers grow among the gravel, often only a foot or two from a melting snowdrift. Moss and lichens give color to the rocks, and the Arctic willow, smallest of all trees, spreads its five or six tiny little dark-green leaves on top of the moss. The vegetation may be abundant in places, but it can hardly be called luxuriant. Anyway it is sufficient to give ample nourishment to reindeer, hares and muskoxen, that wax fat during the summer months and in this way store up nourishment for the long, lean winter months. Yes, the Arctic holds much for Nature lovers.

AUSTRALIAN CAPE BARREN GEESE

PHOTOGRAPH COPYRIGHT BY KILROY HARRIS

This goose frequents and takes its name from Cape Barren Island in Bass Strait between Flinders Island and Tasmania. It is about the same size as a common goose, with a handsome plumage mottled brown and gray and somewhat owl-like in character. The bird is becoming rare, despite the fact it has been domesticated. Some specimens have been kept in England.



Road-Runners

By

William and Irene Finley

NEAR THE register of a prominent hotel in Tucson hangs the card of the Southwestern Traveling Men's Association. The emblem in this picture is a bird with a high top-knot, a long tail, and legs that indicate that he is traveling at full speed across the desert. Under the picture is the motto: "You can't run over us." All of which is a parable. Both the road-runner and the traveling salesman cover the ground, but the road-runner is a shy bird and hard to meet.

One cannot get the full meaning of this until he starts hunting a road-runner with a camera and makes an effort to study and photograph this ground cuckoo, Mexican paisano, snake-killer, chaparral cock, or, better still, cock o' the desert.

As we rolled along over one of Arizona's splendid highways, the sand hissed under the wheels. Then just at the side of the white road, scuttling from one gnarly cactus to another, slid a slim, dark bird with head lowered as if dodging the scrutiny of strange eyes. It was a road-runner, and he faded away in the silence that reached out over the shimmering mesa. His shadow came out again, skulking from one bush to another as if loath to let us get out of sight. At the slightest movement, he became scared and slid along low to the ground like a brown streak, almost cat-like. He was making toward the west end of the Catalinas, those rugged mountains that lifted directly out of the plain in front of us, and soon disappeared into the sameness of sand and wash, palo verdes, sahuaros, ocotillos and chollas.

The road-runner is one of the shyest and most wary of the desert birds. He hides from intruders, not merely his nest, but himself. After much careful hunting, one may discover his home, but seldom find him in it. His yellow eye is ever watchful; he sees any movement and becomes a fleeting shadow, lurking cautiously in the dim background, anxious and curious, but fearful. Sometimes he hides before one's very eyes, standing stiff and straight under a cholla cactus, with not even the movement of an eyelid, undoubtedly with that intuition of the wild creature that "freezing" is his most impenetrable cloak. If one catches his eye, he scents discovery and, settling low to the ground, slips away and fairly melts into the sand.

Cock o' the desert, the road runner is well called, as Mr. and Mrs. Finley tell in this story of an interesting southwestern bird. He is a chap hard to catch on the camera film, but the Finleys have again overcome the difficulties with the fine pictures that illustrate this article. By the way, the two satisfied looking birds in the heading are just completing a succulent meal on a lizard each.

A PROUD TAIL IT IS!

The road runner is well named with emphasis on the runner.

Again the slim shadow glided on ahead, weaving in and out among the bushes. "We'll see what kind of a game he's playing," I said as I jumped out of the car and started in a straight-away dash to overtake this teaser who watched us from the corner of his eye and lured us on. There was no road at hand for this road-runner to run; there was not even a cow trail, so he dropped into a sandy wash, laid himself low to the ground and stretched his legs. So did I. I was gaining on him. I kept on the harder soil above; he stayed in the bottom sand which clearly showed that I had the better of it. I knew, now, that he was a half-grown, inexperienced bird.

"He handles himself with astonishing ease," I thought to myself as I gasped for breath. He ran like a pheasant. I was surely getting a little winded. This sprinting over the hot sands was not like the training track of my college days. But I thought I saw myself gaining. I also noticed casually that he was leading

HALF GROWN AND NEARLY READY TO GO A'TRAVELING

The road runner, like other birds of the southwest, find the cactus a hospitable home. In the circle a bird is proudly bringing home a lizard. These little animals and young snakes form the main food of these birds.

SOME GLANCES AT THE ELUSIVE COCK O' THE DESERT

In the crotch of the cholla cactus is a road runner with a fine young lizard that will delight some baby bird's appetite. In the circle a bird gives us a look at its wings and below it is stopping for a detail of toilet.

me over rougher ground and making for a little thicket of cholla cactus. I must overtake him before he could reach it. He saw me coming and jerked to the right—instead of a bird in my hand, I grasped a joint of cactus. My fingers were stuck full of spines. I had enough.

We learned later that my experience with the road-runner was not an unusual one. In fact, it is the custom to lose your road-runner. If I had caught mine, I could have raised a hue and cry. It is also a trick of the road-runner to play his enemies against the cholla cactus—a cruel trick, but all the desert is cruel. Everything grows thorns, whether it be plant or animal. The big fat toad that lives about our northern farm would not last long in the desert. If he would survive among the cacti he would have to change his pudgy body to that of the horned toad or lizard, slender with a hard shell on his back and a crown of thorns on his head. Or he might protect himself like the lizard with a scaly coat. In the end, the cholla cactus is the best friend of the thrashers, wrens and road-runners. It is their shield against hawks, snakes and lizards.

A PAIR OF YOUNG ROAD RUNNERS

Alight on the branch of a cactus, they have no fear of being stuck by the spines of this prickly plant.

Frequently we caught glimpses of the fleeting shadows. One day, as we sped along, something under a bunch of cactus caught my eye. A road-runner was standing stiff and straight watching us, thinking he could not possibly be seen. I walked in a circle, getting closer and closer till I could see him plainly and the markings of his striking coat. As usual I was Argus-eyed for a road-runner's nest. Perhaps this young decoy lolling under his cactus would lead me to his home.

Later my eye became fixed on a darker spot in the heart of a cholla ahead of me. Something moved. Gradually I made out a rough hulk of a nest about a foot across with an old road-runner sitting on it as still as death. She was turned with her head to the open space in front of her, while her black tail was pushed straight up in the air by an obstructing cactus.

It was a great find. In the days that followed we got acquainted with the mother and her family. In the nest were one fresh egg, one just ready to hatch, two featherless, greasy black young and two youngsters about grown and ready to leave home. This showed that the eggs are laid irregularly and that incubation begins almost as soon as the first eggs are in the nest. Fresh eggs and young are commonly found together, and by the time the last young are breaking out of the shell the older ones are graded up to half the size of the adult, or perhaps some have left home.

One day we were sitting cramped and sweltering in the old umbrella blind with the suffocating curtains shutting us in, waiting for the mother to come and feed. Her returns were always accompanied by long waits and vigils. We knew when she was coming by her soft, rattling noise and the snapping of her bill. After she had satisfied herself that all was well, she ran quickly up to the foot of the tree, paused a minute, and then we heard her feet scratch on the rough bark as she climbed into the nest.

Her brooding was brief. Everything was already warm enough. She slid down the bark and came close to the blind, standing with raised crest and tail moving rhythmically up and down, uttering her low "Kr-r-rt!" like an old hen calling softly to her chicks after a hawk has flown by.

We were looking at a bird nearly two feet long, the tail half the length of the body. Her coat was gray or brownish, streaked with bluish-black, with a sheen of bronzy-green. A black tail, iridescent above, showed white thumb-marks on the outer feathers. Her whole dress was harsh, especially the bristle-tipped crest. When she became excited and raised her crest, the feathers on the side of her head parted, showing a bare spot just back of the eye that was orange and blue.

We wondered if her desert diet produced this brilliant coloring. Maj. Charles E. Bendire, in his "Life Histories of North American Birds," says "the food of this species consists chiefly of insects, particularly grasshoppers, but embraces occasionally a lizard or a field mouse." Yes, occasionally. If Major Bendire could have watched at this nest as many hours and days as we did, he would have doubled that occasional lunch of lizards many times. We were

crouching at the peep-hole waiting for her to come. Close by her rattle sounded. She carried a big lizard, grasped firmly in her bill. Up the bark she scratched and for a starter thrust the lizard, head down, into the mouth of a youngster. The tail hung out of his bill for some time. But something had hold of it below and finally it disappeared. She came with another lizard. Then the second youngster sat stiffly propped with a tail hanging out of his mouth. Again came a lizard—and again, and again—there was no counting; the larder was full of lizards and nothing else!

ON THE WATCH

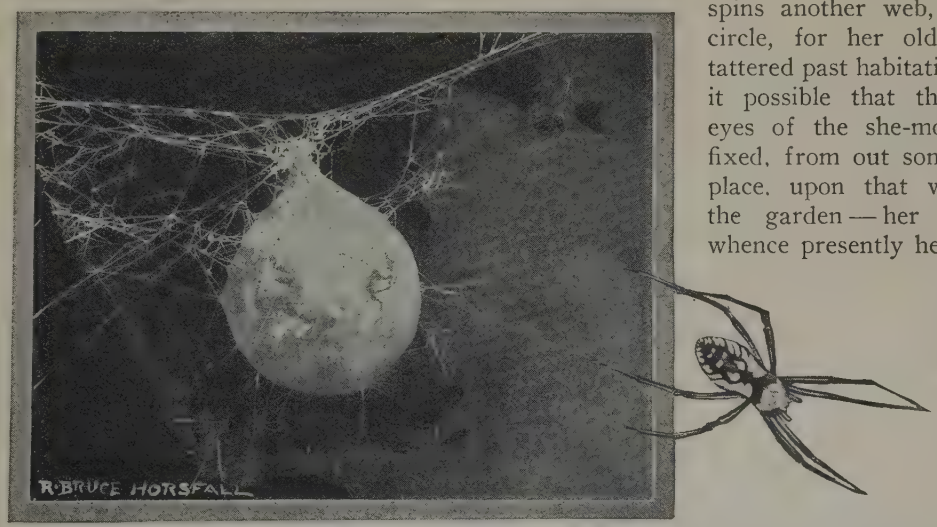
Among the various names given the road runner are cuckoo, snake killer, chaparral cock and Mexican paisano.

Twice during one morning the mother stepped on cactus spines. She had a lizard in her mouth. She hopped on one foot, mumbling the lizard and dabbing at the toe, and finally pulled them out. The mother road-runner was wary, but a few days changed her attitude toward us. At first, when she saw us coming, she disappeared like a streak and didn't show herself, though we were sure she watched us from some safe blind of her own. Later she didn't want to leave. We worked openly in front of the nest. She was still uneasy but was gradually losing her fear. She ran from one clump of bushes to another and flattened herself close to the ground like a crouching cat. Sometimes she stopped in an open place when she knew our eyes were upon her and tried to wallow herself into the sand itself, at the same time making a fine whining sound much like a young baby. The young responded with the same crying noise when she was feeding them, snapping their bills also. How many times in a morning from the dark recess of the blind we looked into her eye, and, though she couldn't see us, instinctively her crest rose and all her feathers bristled. Her tail tilted up and down; she rattled and snapped. But we surely all parted as friends after many days together out there in the desert.

A Garden Monster

By Ben Hur Lampman

THERE WAS a spider in the garden. Now spiders in the garden are by no means rare, but this was an exceptional spider. She devised her web, for she was of the orb-spinners, between the brown beans and the Swiss chard, and braced and stayed it and clung motionless at its center—of black and gold she was, clinging there. Her body was the length of a thumb-joint and her legs were banded with gilt, and much attenuated. She played fate to the gnats and dreamed dreams as old as time.



THERE WAS A SPIDER IN THE GARDEN

Betwixt two stalks of chard she made herself a pear-shaped urn of silk.

And presently, stirred by her dreaming, for ordinarily she was a fat and sluggish spider, she deserted her web so carefully woven, and betwixt two stalks of chard she made herself a pear-shaped urn of silk, to which she resigned her many eggs, and so cunningly was the work accomplished that the urn, as huge as a walnut, hung suspended in air. Carefully she passed over it with her spinneret, touching the urn now here, now there, until it was perfection. And lest the rains harm those children to be, she bent at the last a green leaf above it and with cordage of delicate silk lashed it in place.

As to where she has gone, may it not be that she is away on the hunt. Or perhaps she spins another web, circle on circle, for her old home is tattered past habitation. Or is it possible that those fierce eyes of the she-monster are fixed, from out some lurking place, upon that wonder of the garden—her cocoon—whence presently her progeny will issue. Yet we fear that, following the way of many of her tribe, she has passed on. She had perfected the cycle and the rest was with Providence. But one has only to look at that cocoon, so carefully contrived, so stoutly and beautifully modeled, so insured against harm and damp, to understand that a certain dim affection was hers as she toiled in the chard, spinning at her silken urn.

WHEN THE PRAIRIES WERE BLISTERED

By William C. Alden, Ph.D.
U. S. Geological Survey

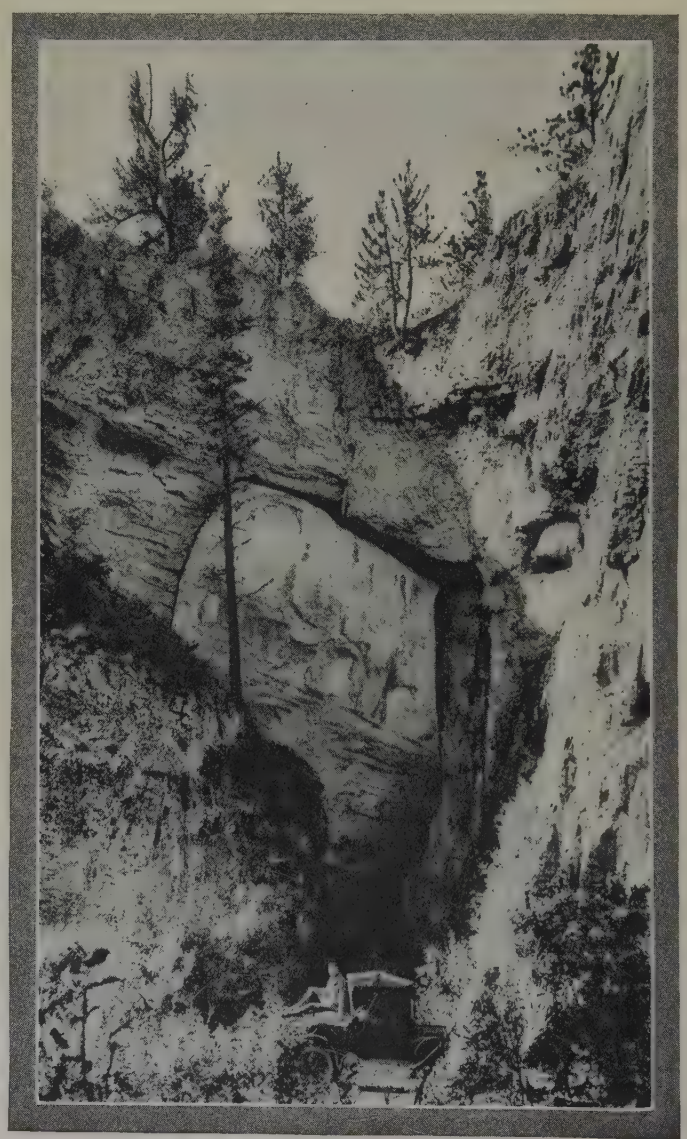
A MAN with diligence and an ax handle may raise a good-sized blister on his hand. But when Old Mother Earth develops a blister on her bosom ten miles in diameter and capped with 7,000 feet or more of rock strata, the irritant applied must have been powerful indeed. Get into your auto and come with me and I'll show you what a real blister is. Of course, that is not just the name that the geologists apply to such a feature. "Blister" is entirely too common and short a name for a real scientist to use. Let us strike out across the Great Plains of eastern Montana and see what we can find.

Taking the Roosevelt Trail west along the Great Northern Railway, we soon leave the Missouri Valley east of Glasgow and run up the valley of Milk River. There is a story in the noble river which once swept eastward through this valley where now a small muddy stream meanders about and ties itself in bow knots. At one place below Malta the river leaves the broad valley. The railroad and auto trail continue along the broad sag past Bowdoin Lake, where the wild duck loves to linger, but the river turns aside southwest and makes a detour through the hills. We may take the Zortman road southwest from Malta or, continuing westward up Milk River to Harlem, we may turn south and cross the Fort Belknap Indian Reservation. Suppose we take the latter route.

Passing the Indian Agency we deflect to the southwest off the main road and run over to Snake Butte to fill our canteens with the delicious cold spring water which issues from the base of the lava-capped cliff, for even on a hot August day the snow still lingers in the deep joints of the lava bed which the sun never penetrates. This "mountain dew" is a most delightful substitute for the alkaline waters of the plains. A dignified Indian clad in the assorted garments of the reservation stands beside the spring and regales us, in good English of the schools, with harrowing tales of rattlesnakes which give the butte its name.

Let's climb on top. All about us on the mesa, as on the plain three hundred feet below, are granite boulders left scattered by the last of the great ice sheets of the Glacial Epoch when it melted away. Some of these rocks were brought hundreds of miles from the region west of Hudson Bay. One great boulder weighing many tons was left so delicately balanced on a pedestal on top of the butte that it is still the marvel of all beholders. The ice must have been very thick to overtop this butte.

Returning to the main road, we go south over the rolling treeless plain and pass other more prominent buttes. The middle one of Twin Buttes near the Matador Ranch rises abruptly eight hundred and fifty feet above the plains. Yet even this was overtopped by the great glacier for its crest is sprinkled with pebbles from the region of Hudson Bay. What! Ice more than eight hundred and fifty feet thick? It does not suggest either heat or blisters. That is true, but the rock that forms the butte was once molten lava, which bored its way up through the plains, as did the lava now capping Snake Butte.



A BRIDGE THAT NATURE CARVED

Arch in Mission Canyon that spans a tributary gulch like a triumphal edifice of Nature erected to some ancient event.

Twenty-five to thirty miles south of Milk River, beyond the lonesome store and post office at Hays and the group of Indian cabins at Lodgepole, rise the most northeasterly of the outlying mountain groups of Montana. Here we find the enormous blister for which we were looking. It rises three thousand feet above the surrounding prairies and more than six thousand feet above the level of the sea.

"Blister? That's no blister!" you may say. "Those are the Little Rocky Mountains!"

Well, now; let's see. The shale and sandstone strata of the plains which we have been crossing thus far have nearly all been flat-lying, much as they were formed in the lakes and seas which once covered the region, but here at the mountain front they suddenly bend upward. Much of the clays composing the softer shales have been washed away so as to leave low, rounded hills, but the worn-off edges of the harder sandstones stand up in places as a line of hog-back ridges

topped with scraggly pines. Beyond these, and encircling the mountain mass, eight to ten miles in diameter, rises a great white wall of limestone like a massive rampart six hundred feet or more in height. Tilted steeply at angles as high as forty-five degrees, these massive beds of rock evidently rise from far beneath the prairie sod, even from levels far below that of the ocean.

If you search carefully you will find casts of extinct crustaceans and shellfish (trilobites, brachiopods and oysters), corals, and other fossil remains in the rock which tell of life in the ancient seas. Verily, something has upheaved the foundations of the deep! Where rolled the surging billows now rise the rock-ribbed mountains!

In our imagination we see these great limestone strata rising high above their present worn and bevelled edges, arching over a stupendous dome and plunging down again beneath the plains beyond Landusky and Zortman eight or ten miles to the southward. Not only was there an enormous dome of limestone, but upon this and arching over it were the continuations of all the other rocks now found beneath the adjacent plains. Examination shows that these overlapping strata are of alternating shales and sandstones formed of the mud and sand brought by the rivers from ancient lands and deposited, some in marine waters, some in brackish estuaries, some in fresh-water lakes, and the beds of coal or lignite are the product of swamp vegetation. Here are the thicknesses — about forty-four hundred feet of shales and sandstones overlying three thousand feet mostly of massive limestone, and above all these were other beds of shale and sandstone of which no trace now remains in this immediate region nearer than the Bearpaw Mountains to the west or the Larb Hills to the east. What a blister! Truly Old Mother Earth must have suffered agonies when such an enormous swelling heaved up the prairie in the days when it was still in the making.

REMINDER OF THE ICE AGE

Boulder left perched precariously by the ancient glacier, that dropped it as it passed as a reminder of its power.

IN CEREMONIAL DRESS

Indians of the prairie country clad for the tribal fair where dances and bucking contests are the order of the day.

"When was this blister formed?"

In the uppermost rocks in the region which appear to have capped the dome are found remains of the last of the great three-horned lizards or dinosaurs, known as Triceratops, also bones of the three-toed horse, Eohippus, so it must have been nearly as far back as the dawn of the Age of Mammals in Eocene time. This part of the continent had then emerged from beneath the sea, and there were rivers, lakes, swamps and dry land hereabouts. In some of the sandstones are found the imprints of the leaves of palm trees, so it must have been a balmy region.

The top of the great dome is now worn away. In fact, as soon as it bulged above the surrounding plain the sun, the wind, the frost, the rain and the streams attacked it, caused the rocks to crumble, and bit by bit they were swept away until many cubic miles of material had been removed. As the dome rose, the plains about it were also lowered by the wearing away of great thicknesses of rock. Streams flowed out from every side of the dome, swinging from side to side and smoothly bevelling the edges of the upturned strata, sprinkling them with gravel and forming beautiful flat terraces stretching away for miles, one below another. These are datum planes marking epochs in the history of the making of the mountains. Even the massive limestone was stripped off above the top of the mountain wall; then, as the uplift continued, great notches were cut in the wall, and finally, following the last elevation, narrow portals, box canyons or gorges, such as that above St. Paul's Mission, were sawed through it by the streams. These gorges are flanked by towering cliffs of limestone, splashed in places with red, crowned with evergreen forests and decorated with caverns and pinnacles. In Mission Canyon a great triumphal arch or natural bridge spans a tributary gulch.

But what caused the great dome to rise? If we enter some

of the portals or canyon mouths and go back into the heart of the mountains, the secret is revealed. Forced up beneath the limestones and crowded in between the rock strata are great masses of porphyry, an igneous rock which was once a molten magma with a temperature of about 2,000° F. Under the tremendous pressure of superheated steam and gases this molten magma was forced upward from great depths. Instead of breaking through the enormous thicknesses of rock and flowing out up on the surface through cracks or pipes as lava from dikes or volcanoes, the magma crowded in between the strata, spread out laterally and bulged up the overlying layers in a great dome or group of domes. Such a great blister is known to geologists as a laccolith, or stone cistern. As the hot, syrup-like magma slowly cooled it "sugared off," that is, various minerals crystallized in it until at last the whole mass solidified into the porphyry which now composes many of the buttes or peaks. Finally, solutions ascending from the still-heated depths deposited in veins or cracks the precious ores. It is from these that the mines of Landusky and Ruby Gulch have taken out a million or more of glittering gold.

Have the subterranean fires gone out? Is there no danger that a red-hot molten magma may break through the crust and devastate the prairies with a lava flow? How can I tell what may happen in the future? Evidently some heat yet lingers in the subterranean depths beneath the mountains, for at several places warm waters yet issue, as at Big Warm Springs east of Lodgepole. Let us go over there and pitch our tents below the great limestone wall and enjoy the bathing. It is warm enough here in the summer time; indeed it is very hot excepting when the cool breezes sweep down off the mountains. It must have been cool enough during the Great Ice Age. There were probably no local glaciers in these mountains then, but the great ice sheet which centered west of Hudson Bay invaded Montana, partly encircled the Little Rockies and crowded almost up to the foot of the mountain wall. The outer and upper limit of the drift left here by the continental glacier is 3,500 feet above sea level. The ice field overtopped Snake Butte and left its boulders perched thereon. The ice was more than 850 feet thick within ten miles of its edge, as shown by the foreign pebbles on the tops of Twin Buttes north of Hays Post Office.

MISSION CANYON

Sawed through by some past stream that splashed the limestone walls leaving on them records of the past for man to read.

MASSIVE STRATA OF THE "BLISTER" COUNTRY

Once molten masses were forced up from great depths, bulging the surface of the earth into domes or groups of domes.

However, let's turn in and sleep under the stars. There's little danger that we will be overwhelmed either by subterranean fires or by the oncoming of another Glacial Epoch before we get our sleep out. Tomorrow we will go over to Hays and see the young bucks and their squaws decked out in all their glory for the ceremonial dances and bucking contests of the Indian fair. It is a gala event for the young natives of the prairie country.

Here is a story of a novel little pet with bright eyes and winning ways. It is written by Mr. C. B. Manning, traveller and lecturer on South America. There is a moral to this story, also.

Bright Eyes—A Marmoset Pet

By C. B. Manning

BRIGHT EYES is the most interesting six ounces of life I have ever owned. It is a vest pocket pet, winning its name from a pair of sparkling brown eyes that see everything worth seeing. Yes, Bright Eyes is a marmoset monkey, a diverting companion and a sure cure for all of the various kinds of blues recorded in popular song.

The custom in writing stories is to describe the hero or heroine early in the narrative. Bright Eyes, then, is a Brazilian marmoset, with a disposition more gentle than its larger relatives from Central America. Its tail stretches eight and one-half inches, while its body is only six inches.

It is a colorful little companion. The hair on its back is grayish, but when parted shows four distinct streaks or bands of color—gray, black, reddish-brown and black. This hair is silky and about three-quarters of an inch long. Bright Eyes' mouth and chin are splashed with white hairs among the black, and just above its eyes is a pretty spot of white. Its ears are, to say the least, generous. They are as large in proportion as those of a chimpanzee, and they lurk in tufts of white hair that spread out in a fanlike way. Ten stripes of black band the lower part of its back, and the tail boasts sixteen of these stripes.

This little fellow has been well called squirrel monkey. Its paws, tail and body somewhat resemble a squirrel. It has the rodent's habit of scolding, retreating into a corner when a live cricket is given it and trembling with fury, a chattering little tempest.

Bright Eyes does not use its tail for the usual monkey purpose of hanging by it, but finds it a fine pillow or a neck ornament when gracefully curled around. The little marmoset walks awkwardly like an old man with the rheumatism. On a rope or the small limbs of a tree, however, it is quite agile.

In the morning I put my pet on the windowsill to bask in the sunshine. Here it stretches out in full length and is content. I have observed it gazing directly at the early sun and then heard it utter sounds of joy as when happy playing about the room. When I leave the room it utters a peculiar, piercing, lonesome cry for me.

Bright Eyes generally has full possession of the room but often grows listless when not permitted to go out to see the big world. When company comes in it will put on its cutest turns and try to show off like a child trying to draw attention to itself. It is pleased most with little children and seems to act almost coquettishly with them. The most interesting antic that it does of its own accord, when feeling especially frisky, is to turn its back to me, put its forehead down on the table, and then look at me through its four legs.

A GLASSFUL OF MONKEY

From its banded tail to its stylish tufts of ear-hiding hair, the little marmoset is a diverting companion.

When I lie on the sofa it wishes to curl up under my arm. Often when I try to be serious it will seem to say by some little gesture, "Oh, come out of it!" And out of my seriousness I generally come in a hurry.

When I went on a recent trip to Central America I had plenty of friends who would care for my pet, but some mistakes friends had made in trying to care for it caused me to take it along. When I went into the wilds it was on my shoulder and saw everything. When the sun was too hot it would shift to my shadow. Once it fell from my shoulder into a swift river as I stepped from the boat but came bobbing up all right.

Spanish military officials are, as a rule, very stiff and dignified. Having a dislike for unnatural stiffness when called upon to meet them, I would pull my little marmoset out of a tiny box no larger than a cigar box. In only a few seconds all had forgotten themselves and were "kids" once more. So I used little Bright Eyes to do what I couldn't do—crack the ice of formality. And it always cracked.

I have not tried to teach it tricks as it does not belong to the trick class of monkeys, but I did try to get it to imitate me in one manner. I observed it looking intently at me as I stuck out my tongue at it. After repeating this several times to my surprise it stuck out its tongue at me! This it will do almost any time, even when I do not start the game. It has the common failing of all monkeys of amusing itself by looking in the looking glass.

Bright Eyes cannot understand why I will deny it the library paste. How it will work on the stopper to get it out! When I turn my head it will make for the paste and eat

all it can until I come and pull it away. How mad it becomes then!

It cannot stand much cold. In Mexico City it was so chilly I had to give it a hot-water bottle at night. It is very fond of its gymnasium, a bird cage less than one foot square.

Little Bright Eyes makes quite a hit in the public schools. She is too small to show satisfactorily in a big auditorium from the platform, so as the children pass out they are given a close-up view, and here the little creature is at her best, for she gives each one a quick penetrating look.

Beyond its companionship, my monkey has taught me something. It is a lifelong lesson. If I have been too harsh with others, the little monk shuts right up. It gets mad when grabbed in a hurry or made to do things. Gentleness is the key that unlocks the best to winsome monkey nature. I thought I knew this before, but now I know that I know it. I try to keep this lesson in mind, and, as I deal with others, pass on by my actions the lesson I have learned from my little pet—gentleness. And when a monkey can help make a gentleman out of a man, I don't call this monkey business.

BRIGHT EYES LOVES ITS GYMNASIUM

The marmoset does not use its tail for the usual monkey purpose of hanging by it. It is agile on rope or limb of tree.

An Ancient Bald Cypress

PROBABLY the surest way to create a riot and place one's neck in danger of the noose would be to harm a twig of the great cypress that stands in the little churchyard at Santa Maria del Tule. This little village is some twenty-two kilometers east of Oaxaca, Mexico, is not notable of itself but boasts a tree that probably took root in the soil long before history was a matter of civilized record. We are indebted to the *Bulletin* of the Missouri Botanical Garden for information about this remarkable bald cypress.

COURTESY MISSOURI BOTANICAL GARDEN

THE OLDEST LIVING TREE

It is believed that this great and ancient cypress at Santa Maria del Tule, Mexico, is a claimant to this title.

It first caught the attention of Alexander von Humboldt in 1803. Cutting a shallow hole on the outer part of the tree, he inserted a square board on which was a Spanish inscription. The tree valiantly proceeded to heal the wound so that all that is now visible is "der v Hum" of this traveler's name.

Various measurements have been made of this tree. One of the latest (made under the supervision of a guard of soldiers and in the presence of most of Santa Maria's population), was taken by Dr. Hermann von Schrenk. Measured breast high the tree was found to have a girth of 126 feet. Its health was found to be excellent; its massive, comparatively short and deeply fluted trunk, sound; and its full crown strong. One or more lateral incisions could be made to determine the age without endangering the tree, but such an act would find all Santa Maria armed to the teeth to resist. It can be definitely estimated that the tree is between 4,000 and 6,000 years old.

Dominica is an island of many mysteries, of which the Boiling Lake, described by Mr. Whelpley, is one. Mr. Paul Griswold Howes, who is well known to the readers of NATURE MAGAZINE, is now on the island at his tropical research station. This article will serve as an introduction to Dominica—a prelude to a wider acquaintanceship coming through articles from Mr. Howes' pen.

The Boiling Lake of Dominica

By Philip B. Whelpley

(PHOTOGRAPHS BY THE AUTHOR)

THE Grande Soufrière, of which the chief feature is the remarkable Boiling Lake, in the West Indian Island of Dominica, is but little known even to the islanders who are constantly reminded of its presence. Clouds of steam indicate where it lies in the mountains, and to Roseau, the island's port, the detonations from its steam vents proclaim its close proximity. It is only six miles from the town as the crow flies, but until an air route is established man must foot it over a difficult and even dangerous mountain trail, if trail it can be called. The general direction and line of least resistance are all there is to follow a part of the way.

With an intelligent black mountaineer as guide, I left Roseau in the evening to make the seven miles by moonlight to Laudat, the mountain hamlet where we were to spend the night. This road lay through lime groves and some forests.

From Laudat the way is one of sharp ascents and declivities often to be managed only by hand-over-hand climbing of the strong lianas which cord and festoon every tangle of tropical growth. These were slippery from moisture, even pouring rivulets upon us at times. The steam vents at the goal kept up a thrilling, if at times deafening, accompaniment. The solitaire, that rarely seen, shy bird of the island mountains, from some shelf overhead added his testimony in clear, heavenly notes to the unearthly mystery that surely possesses these fastnesses.

Three hours' effort ended suddenly on the brink of the crater-like Grande Soufrière. This "Valley of Desolation" is materialized inferno. It runs from northeast to southwest, a vast sunken arena terraced in the side of the mountain about one thousand eight hundred feet above sea level.

THE VALLEY OF DESOLATION

The Boiling Lake is seething in the distance to the north, beckoning the seeker of the mysterious.

Hot springs and steam gush through its mud-and-pebble floor with the deafening effect of a railroad yardful of locomotives with throttles open. To the eye, when the steam is sufficiently blown aside to see them, the valley walls and floor, boulders and débris are a weird, light, mouldy, sulphurous green which even five adjectives fail to describe. The springs themselves are of various colors and consistencies, some of the muddier ones being coffee colored, some almost black, others bluish-white like skimmed milk. They were of different volumes and strengths, the larger ones gushing to a height of quite six feet. Sulphur fumes filled the air, and our vapor-soaked clothes and the camera carried away a large deposit of sulphurous mould.

A GREAT SEETHING CALDRON

Steam and gases pour from the lake making it dangerous but an alluring place to explore.

The Boiling Lake lies in the northeastern end of the valley in a basin, the walls of which rise sheer and high, in places possibly a hundred feet above it, falling away to fifteen or twenty feet at the southeast where the overflow breaks through in a stream. The temperature of this brook has been found to be 88° C. From this fact it is calculated that the stream at the boiling centers of the lake must be at least 100° C. Two of these hot-spring regions and two cool streams entering on the northwestern side feed the lake.

We followed the steaming outlet in to the pebbly and

crusty shore keeping to windward of the steam which was swept up in gusts from time to time. The lake is circular, in a shelving terraced basin, so that its diameter varies, being by measurement three hundred feet at the highest mark. It was perhaps two hundred when I saw it—a big enough steaming caldron! There was great activity at the two hot-spring centers, the surface boiling a couple of feet higher there but not spouting as it is sometimes said to do. The whole lake is bluish milky in color from the sulphur which it holds in suspension.

Our wet handkerchiefs gave some relief from the sulphur fumes, and my guide was averse to our going nearer than fifteen feet from the edge. The tragic death of a young Englishman and his porter on the shore of the lake in 1901 impressed a lasting lesson of caution upon the natives. There are two versions of the cause of death in this case: one that the men were asphyxiated by carbon dioxide, and the other that they were poisoned by sulphuretted hydrogen—but I did not learn which was the truth. The latter is the popular theory in the island, and the folly of going to the lake without chlorine as antidote was impressed with bated breath upon my wife after I had started; she also learned that day of the young Englishman's unfortunate end by stumbling upon the memorial stone erected to him in the town cemetery. But unless the lake is very full, as in the rainy season, when it is said to stop boiling vigorously and to emit then an immense amount of gases from all of its surface, making it really dangerous, the ordinary precaution of keeping out of the vapor as much as possible should insure safety, even if it does not prevent the more or less slight indisposition which most visitors, including myself, suffer afterwards.

There is no record of the Grande Soufrière having been visited by Europeans, as far as I can learn, previous to its so-called discovery by Dr. H. A. A. Nicholls, a distinguished resident of the island, and two others, in 1877. In 1880 it was in eruption, mild for a West Indian volcano but terrifying enough to Roseau, which was wrapped in darkness. covered with ashes and given the usual thundrous accompaniment to such outbreaks. There was no loss of life, however. In the terrible 1902 eruption of Pelé and the Soufrière of St. Vincent it took little or no part, but in 1906 was unusually active at the time the island was shaken by the worst earthquake in its recorded history.

It is, as I have said, a little known wonder, in an island as full of mystery and almost as unknown—in spite of the quite stirring and eventful little history which its inhabited portion can boast—as when Columbus discovered it in 1493.

A Home Made of Paper

THE SOCIAL wasps have been called the original paper-makers from the fact that some of them make their nests of a paper-like fabric. Most country boys (let us hope) have seen the white-faced hornet (*Vespa maculata*) industriously gathering tiny particles of wood from fence posts, stumps, or the sides of unpainted buildings, and after chewing the mass for a few seconds fly away to the spot where it was building its nest. Probably some sticky substance is mixed with the moistened wood pulp by the insect. At any rate, the paper it makes is waterproof and strong enough to withstand the storms of a full season, and sometimes much longer.

NEST OF WHITE-FACED HORNET
It is made waterproof and will stand a full season's storms.

Each colony of wasps which occupies a nest is started in the spring by a female which has survived the winter. In each cell of the comb she lays a single egg. The offspring of the first laying are all imperfect females, or workers, and it is the duty of these, after they are brought to maturity, to add to the nest as the colony grows, and to feed the young. The young which hatch from later layings include males, or drones, and a few queens, or females which can produce eggs, and thus start a colony of their own next season. The young, and also the queen after a colony is started, are fed the remains of flies and other insects captured and partially chewed by the workers. The workers, besides acting as providers, also protect the few potential queens from the reigning one, the founder of the colony, that the race may not die out. As the colony increases in size it is, of course, necessary to enlarge the home. This is done by tearing away the sides and adding successive wall structures to house the increased volume of comb.

As cold weather approaches and the pinch of hunger begins to be felt by the workers, all the undeveloped young ones are left to starve. Later the drones and the workers themselves all die, leaving the perpetuation of the wasp race dependent on the queens which have from time to time left the nest to hibernate elsewhere.

PARROTS FROM HERE AND THERE

By Dr. E. Bade

(ILLUSTRATED BY A FULL-PAGE INSERT IN COLOR FROM A PAINTING BY R. BRUCE HORSFALL)

RED AND BLUE MACAW

A beautiful bird in a zoo, but more beautiful in its native tropical home.

ALONG the banks of tropical and subtropical streams, where sun and water, the giver and producer of life, are found in the right proportions, age-old forces have developed a luxuriant and profuse flora and fauna. A thick virgin forest encloses the stream and its tributaries. Among the foliage of the trees shine the brightly colored flowers of the climbers. *Araceae,* and ferns grow in the shade of the trees, covering the rich black humus with the green tint of life. This profuse and luxuriant vegetation finds its counterpart in the bird life of these regions. The most noticeable of all these birds are the parrots, giving an added touch of color to the eternal twilight of these forests.

They are seen in uncountable numbers, both in the morning and in the evening. Then the trees bend under an unaccustomed weight, and the shrill screaming cry of each individual fills the air—a deafening symphony of the tropical forest.

But there, where man makes the soil his servant, the parrot is not wanted. The beauty of its plumage, the captivating charm of its being, the life which it brings into its surroundings, do not compensate the damage inflicted upon the cultivated crops. The farmer drives it back, seeing only the harm done to his crop. Therefore, he mercilessly destroys the bird which slyly and cunningly robs him of his possessions.

Although parrots prefer the forest-covered plains, they are also found in other places. They have been observed to go high in the mountains, along lonely, precipitous shores, in treeless plains, and in rocky and mountainous regions, wherever there is drinking water. The majority of them live in the crowns of the higher trees, and from time to time not a few of them come back to the ground. A few species only leave the ground when they are frightened away or when migrating from one neighborhood to another. The most attractive places, from their own point of view, are the forests in the vicinity of cultivated lands. They will fly long distances for farm products, and there, where they are protected for religious reasons, they will roost in the fields or in the trees of the village.

PERCHED ON ITS NATIVE PLANT

The parrots give an added touch of color to the eternal twilight of tropical forests.

These birds awake in the first gleam of the dawning sun, dry their dew-covered plumage, perform wonderful aerial feats while in playful flight, call and tease each other, and, when the sun has risen above the horizon, seek for food. Upon these, their piratical undertakings upon farm lands or gardens, they are very circumspect and prudent. Their entire being is full of cunning, and, when observing them narrowly, one wonders how closely their wile resembles that of the monkey. Not without reason are they called the monkeys of the bird world. With a quiet rarely met, they go about their thievery, not attracting suspicion or attention. A field about to be harvested or a tree ripe with fruit brings all the parrots for miles around. The large and beautiful macaws are always found around the *Erythrinus* trees eating the just opened, bright red flowers with relish. When the trees stand in the forests these birds make a veritable clamor. But their manner is entirely different when they visit a rice field. Then each individual represses its noise, and only a low muttering and murmuring sound escapes them. But the work of destruction is unbe-

LEADBEATER'S COCKATOO

This is one of the best known of the cockatoos, and a remarkably interesting bird in its own right.

ONE OF THE COCKATOOS

This sulphur-crested cockatoo is a striking bird as are many of its similar fellows.

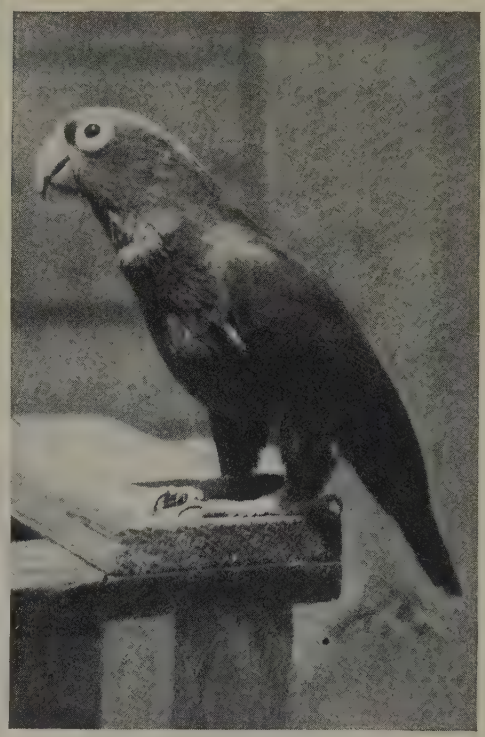
fly away only to return when the disturber of their meal has gone away.

The food of the parrots in their natural habitat consists principally of plant material. Everything from the rhizomes and bulbs of edible roots to ripe fruits, and from flowers to the soft rind and bark, is taken. Anything that the plant produces is appreciated. The strong, firm beak crushes the hardest nut, takes the juicy meat from the fruit, gnaws the bark, and picks the berries. If the fruit is too large for the beak to hold, it is held with the foot and so brought to the mouth. Only once in a while, when they happen to be found, are insects eaten, and then only as a change of diet.

All parrots are monogamous. The pair show a touching fondness for each other. As soon as spring, the rainy season of the tropics, spreads a green mantle over the plains and the forests, the swarm breaks up, and the mates pair themselves off, but without entirely losing contact with the company. Both seek for a suitable nesting place, which, as a rule, consists of an old woodpecker hole or a crevice in some boulder. At least one species, the monk parrakeet, builds a rough, freestanding nest. This is an inhabitant of the plains of Argentina and other parts of southern South America. Most parrots breed only once a year, and lay few eggs but some of the smaller ones may nest more than once and have larger clutches.

Both parents care for the exceedingly helpless young, which only leave the nest some time after hatching. They are also fed and taken care of after they have left the nest, and become independent when they have become perfectly strong and self-reliant, and able to forage for themselves.

lievably rapid. One cannot creep up to the plunderers, for always a few of the older and more crafty thieves remain on guard in the higher trees. The first note of warning is a half loud cawing, the second call results in a universal cry of all the thieves which mounts to a deafening cry as they



PANAMA AMAZON PARROT

Great care should be used by the owner of a pet parrot in the matter of its diet.

Although most parrots are true children of the tropics, they become acclimated to lower temperatures. Where there is a sufficient quantity of food material for them, they will even withstand unfavorable climatic conditions, which are unknown in their more narrow and restricted natural zones.

Parrots have been kept as pets for ages. Man occupied himself with them at a very early period, and still today do the wild and untutored people of the tropics keep them in their huts. The captive macaws have been the favorite bird of the Indians. At the discovery of the new world the seafarers saw these tame birds flying in and out of the huts of the natives, and their bright plumage had been used centuries ago by their forbears. The natives of Australia have hunted and captured the native parrots for years. Even in Africa, the home of the valuable gray parrot, they are caught and tamed by the negroes. This is all the more remarkable since the negro is more or less blunted against the beauty of the feathered world. To him birds only serve the purpose of filling his ever-hungry stomach. Nearly every returning ship from the tropics and subtropics brings a few parrots which are easily sold in the harbors of the temperate zone. As a rule, as can be supposed, the large parrots, which possess the characteristics of reproducing human sounds and words, are the ones which find the most ready customers. No parrot learns how to talk in the true sense of the word, but it learns how and when to reproduce words at the right time and in the right sequence. It fits the words to the circumstances. It also combines methods and procedures, and therefore it seems as if the parrot knows what it says. In order to reproduce words no speaking bird uses its tongue; he speaks through the larynx.

In the home of the lover of birds, the parrot learns to eat all kinds of food. The mealy seeds of its native land, the fruits of the tropical forests, do not satisfy it any more. It is gradually accustomed to other food, hemp and

THE STARTLING MACAW

The red and yellow and blue macaw, that is presented in color with this issue.

sunflower seeds. Other food of man is offered. The bird tries it, and the more it learns of this new food the more it wants. The former simple child of Nature becomes spoiled by the man who took it to his home. When it is given sweetmeats, it desires more and more of them. The simple food for which its entire body is fitted and adapted does not satisfy any more, and the many titbits make it delicate.

Nearly all those things enjoyed by man will be taken by the parrot. But such care is completely out of place; for only those foodstuffs to which the body of the animal has been accustomed throughout the years of a free and independent life can keep the bird healthy. The organism of the parrot can be gradually bent to assimilate other foodstuffs as well, but this must take place very slowly indeed. Every sudden change has its effect on the organs of secretion and digestion. The effect becomes more and more pronounced as the food given varies from its natural diet.

Unripe corn on the cob is a favorite food of all larger parrots. If it is not to be had, then take an ear of ripe corn, boil until partly soft, and give it to the parrot after it has cooled. After a time a little oats, millet, and hemp, can be given. When the parrot has been accustomed to this food, if it is lively and happy, a tiny piece of a boiled potato can be given. From time to time it will also take fruit. The parrot should also have twigs of fruit trees or willows. It not only gnaws the bark, but also eats the buds and leaves with relish. If such twigs can only be secured with difficulty, then the parrot is satisfied with carrots and pieces of melons and squashes, other fruits, and sunflower seeds. Nuts should be slightly cracked before they are given so that it will not break or injure its beak on the hard shell. The hard pit of all fruit should be removed. The greens that a parrot should receive are cabbage, lettuce, and *Stellaria*. But the leaves should not be moist or covered with dew.

Sugar, of which the parrot should receive but little, does not injure it, but it should have more of zwieback and old white bread. When the bird likes one food more than another, it can be indulged if it does not develop a vice.

Animal material, no matter of what description, should not be given. It leads to one of the worst bird illnesses known, the plucking and eating of the bird's own plumage. Self-plucking also becomes a habit when the birds are left too much to themselves, that is, when the owner pays too little attention to them.

The majority of the parrots love to bathe, but prefer running or dripping water to standing water. When placed in the warm rain on a hot day, these birds enjoy all the pleasures of a cooling bath. Later they should be carefully screened from drafts until perfectly dry. Should a parrot become accustomed to bathe in a bowl, it will do so daily. The vessel should not be smooth and slippery, for this frightens the bird; it cannot find a firm place on which to hold itself, and so gives up the idea of bathing entirely. Parrots also like to paddle about in the sand. Here they are able to remove the dust of the feathers which collects in their plumage. The same thing is partly accomplished when they beat their wings together with a great furor.

A Fisherman of the Depths

By Edward A. Preble

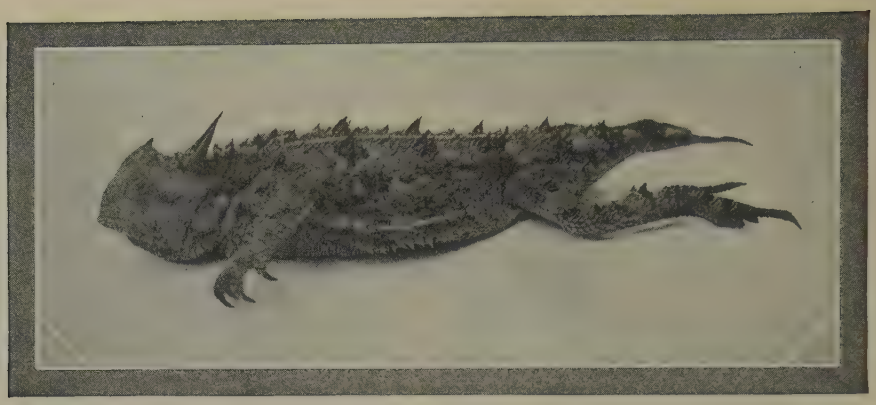
THIS deep sea fisherman with the open countenance belongs to a family the members of which make a living by lying in wait "to welcome little fishes in with gently smiling jaws," after the manner of the crocodile as related by Alice. It is the *Melanocetus krechi,* and was taken at a depth of about 8,000 feet in the Indian Ocean east of Sansibar by the scientists of the *Valdivia,* of the Deep Sea Expedition sent out by the German government in 1898. The small fry represented as looking with suspicion on their neighbor may well take care, for fishes of its class are not only able to make way with any number of small ones, but can actually swallow prey larger than themselves, being provided with an extensible stomach for use in such emergencies. The species here pictured has every appearance of being able to live up to the reputation of its family.

A FISH WITH OPEN COUNTENANCE

This ferocious looking denizen of deep waters is equipped with an extensible stomach for emergencies at meal time.

The curious appendage which this monster bears on its head is a modification of the dorsal fin, only one spine of which remains. This appears to be luminous, and is supposed to be used as a lure to attract its prey within reach. In some others of the group the bait may be soft tentacles which move back and forth in the gentle currents of the deep, and appear to the smaller fishes like possible sources of food.

The eyes of these bandits are usually quite rudimentary and of little use to the owners in locating prey, so like many other fishermen they throw out the bait and wait for the game to come along. This fellow of the Indian Ocean is represented in the Atlantic by a closely related species which lives more than 15,000 feet below the surface, the greatest depth at which any members of the group have been found by seekers of the deep.



FEIGNING DEATH

But curiosity made him open his eye. The photograph is actual size of the lizard.

Horned Lizard of the Southwest

By DAVID J. MORRIS

DOWN in the southwestern portion of the United States, especially in the States of Texas, New Mexico, Arizona, and California, there lives an interesting little creature. He is a horned little fellow literally covered with horns from the end of his nose to the tip of his tail, a distance of from four and a half to five and a half inches.

This is the horned lizard; far better known in the southwest by his common name of horned toad. We will call him here the horned lizard, or just plain horney. He is a distant relative of the iguana and has more than a dozen different species of cousins himself. Any one of these will, however, represent the tribe of horned lizards satisfactorily.

The horned lizard is friendly. One may come quite close to him before his dignity will get the best of him. Then away he will run in a sideling gait. It takes some speed and quick grabs if the observer wishes to catch the little lizard. But only one portion of his body invites a hand hold; the one inch of tail where it is scaly with little horns but no stiff ones.

The two large horns on the extreme back part of his head are his proudest possessions. They are from one-half to three-quarters of an inch in length and he often threatens to hook with them, or perhaps just wants to show them off. The farmers of the southwest call the horned lizard their day patrolman. All day long he is out on the hunt for his food, which consists entirely of insects and their relatives. He makes no distinction between harmless and harmful insects, but takes every one that comes in reach of his three-quarter-inch tongue. His main diet consists of beetles, ants, foliage worms, small bugs, spiders, and such. The lady-bird beetle is the only one that the farmer objects to his eating, for this insect makes her meals on the cotton lice and aphids that do great damage to the cotton plant and fruit trees. But the number of insects that travel down the throat of a horned lizard every day is enormous, and the good he does offsets the bad ten to one.

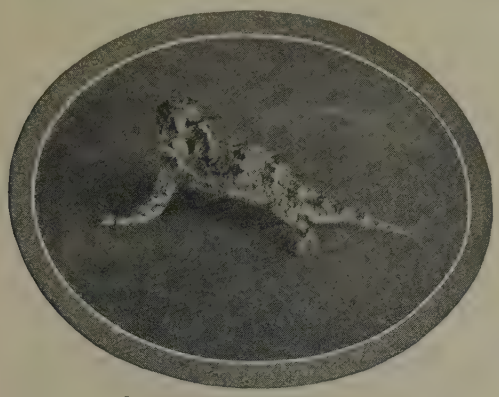
BIRD'S-EYE VIEW OF THE LIZARD

This gives a splendid view of the broad back, shape, size and general appearance of him.

The color of lizards varies somewhat with the soil on which they live. The true color is gray, with white black or yellow rings of color around the horns on the back. This feature of color rings aids the lizard greatly in camouflaging himself by squatting to the ground when an enemy comes near. I have seen horned lizards that lived in sandy regions that were almost yellow or white, and on very black soil they sometimes get almost black. The habit of the little

fellows is to stay home, for they seldom leave their native stamping ground. The changing of their color to meet new conditions is very slow.

When he thinks danger is near he will flatten out on the ground, "as flat as a flounder" and feign death to perfection.



MAD NOW, WATCH OUT

The little horned chap has decided to charge or is interested in something.

I have taken one into my hand apparently dead, and with no sign of coming to life. But when I got a little stick and tickled his sides, horney woke up and showed his gratitude, swelling until he was almost round. Let him take a notion to get away, however, and he will squirm, wiggle and twist.

Horney does not object to any kind of prohibition laws since he abstains from any kind of drink, either hard or soft. "Surely he drinks water?" you say. No, so far as has been observed he never drinks anything. I have never observed him near water nor questioned any one who has. If he does drink, it is like the camel, "it is a long time between swigs." The insects he eats must give him the required amount of moisture needed for he is typically a dry land creature.

TWO LIZARDS GOSSIPING ON A ROCK

All the observer can do is to wonder what they are so intently talking to each other about, sitting there sedately in the sunlight.

The only sound the horned lizard makes is a hissing sound similar to an old setting hen. This noise is made only when he is greatly disturbed. His foes are principally the snake and such animals as the skunk. There is one that horney detests more than any other and that is the dog. The dog likes only to play, but horney gets real mad and runs about with one side of his body up into the air and the other side on the ground, indulging in all kinds of dangerous twists with his head and horns. If the dog continues to bother him, he has resort to his concealed weapon. From the ducts near his eyes he ejects a stream of red liquid, commonly called blood. This is aimed at the eyes of the foe and if it gets into them, while doing no lasting harm, will temporarily blind and annoy the foe. Then horney has a chance of making a getaway, which he usually takes.

Unlike many lizards the horned lizard in this section produces living young. About the month of August the little lizards are born, from one to two dozen of them. The little fellows are even smaller than your little finger nail, are almost white, but boast a full set of horns. You may think that Mrs. Horney has quite a job on her hands, but she lets them care for themselves from birth. During the three months they have until hibernating time they add from one inch to one and a half inches. In the states where frost occurs they hibernate about December and remain in the ground until March, when they begin to come out on warm days and go back at night. By April they are out all the time.

Soon after coming out of the ground in the spring the horned lizard begins to shed his old rusty, dirty overcoat of the past winter. This old skin comes off in small pieces as the lizard runs about. The old saying that the horned lizard rolls his skin into a ball and swallows it is not true. Horney would have quite a job collecting all of that old skin together.

One time a little girl about five years of age came with her mother to visit our farm. As usual with children, Mary at once went outside to see what she might find and came running in the house a little later and exclaimed to her mother that "these people had one of the devil's children outside."

The mother, needless to say, as well as the rest of us, was quite astonished.

"Why, Mary, what makes you say such a thing?" mother demanded.

"Cause, there is something outside with horns."

"Oh!" breathed the relieved mother, "that is the cow."

"No, it isn't, either; it is a little thing," stated Mary.

Out in the yard was an innocent little lizard, unjustly called a child of the devil.

One day when I was walking about over the pasture, I came upon a little lizard who seemed quite friendly and sociable. So I sat down on the ground and for five minutes he crawled about over my shoes and clothes. After a bit he seemed to feel he had seen enough of my kind and went his way.

HORNEY HIMSELF

He is a distant relative of the iguana and also has many cousins that are quite similar to him.

THE BUFFALO DREAMS OF THE PRAIRIES WHERE HIS ANCESTORS ROAMED PHOTOGRAPH H. ARMSTRONG ROBERTS

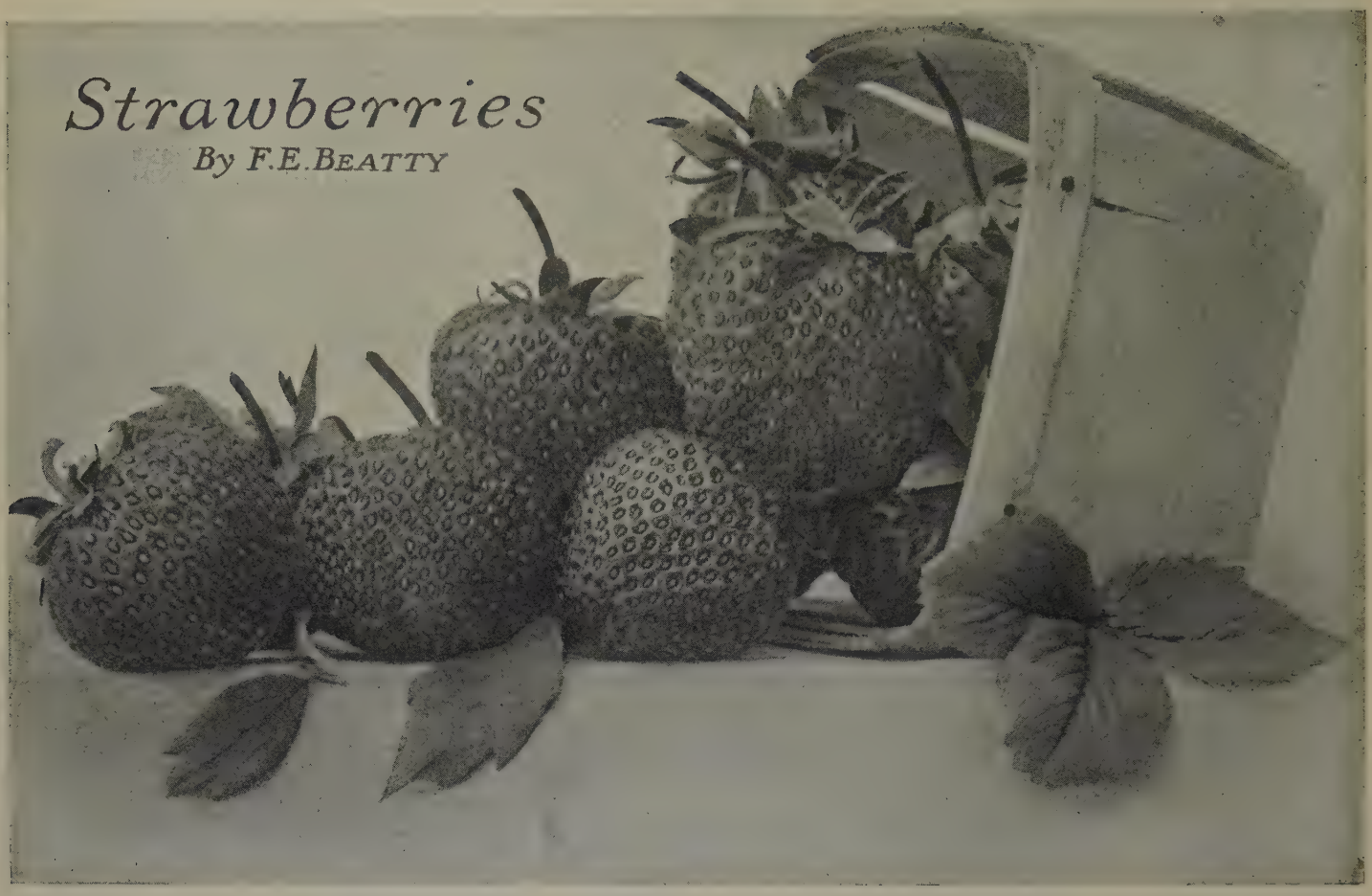
This notable species is properly called the American Bison; the true buffaloes do not have the hump above the shoulders. Although this typically American animal has been displaced from most of his original range, he bids fair to survive in the flesh when many of his associates are known only by their remains.

THE BLACK BEAR MEDITATES UPON THE SOURCE OF THE NEXT MEAL PHOTOGRAPH J. G. ALLEN

One of the most popular of our wild animals, this bear is amusing, understandable and often ridiculous. The American Black Bear, represented by several geographic races, ranges over the greater part of wooded North America from the canebrakes of our Southern States to the farthest borders of the evergreen forests of Canada.

Strawberries

By F.E.Beatty



THERE is just enough mystery about the strawberry to make it interesting. Whence came the first strawberry seed none can answer, save that it came from the source of all good things. Why it came and why it has been so widely developed is easier of reply. The strawberry is one of the most healthful of fruits, and no doubt Nature gave it to us for our health's sake.

The strawberry is decidedly a Pan-American fruit, growing more largely in this continent than elsewhere. Today the annual crop is valued at about twenty million dollars, not including the berries grown in the home garden for home use.

When the first terrible winter of the Pilgrim colony on the shores of Massachusetts had passed, the little band found the wild strawberry to be one of the riches of the new land in summer. These fruits grew in profusion in meadows and uncultivated areas. The Indians used them, mixing them with meal and making a strawberry bread.

About 1700, people began transplanting the wild strawberries into their dooryards. It was not until about 1750, however, that there grew up any extensive cultivation of the strawberries for the market. Then there was laid the groundwork for what has grown to be a large horticultural industry. Thirty-two years ago I began playing with strawberries. Then my playground covered only six acres. Now it extends over four hundred acres. And it is playing, because I enjoy it. Others have enjoyed it and since the early beginnings of strawberry growing, plant breeders, horticulturists, nurserymen and amateurs have been steadily at work improving the berries. Today there are hundreds of named varieties, far superior in every way to the wild berry from which they came.

It has been said that God might have made a better fruit than the strawberry, but He didn't. It might also be said that God could have made the strawberry in the beginning just as good as it is now, but He didn't, and it is well for us that He didn't. One of the things that makes this life worthwhile is the privilege we have in improving fruits and flowers and helping Nature make the world a more beautiful and more desirable place in which to live. It gives us an opportunity to improve our talents.

A PROPERLY SET PLANT

The dotted line shows where the fruit stock should be cut to prevent too early fruiting.

Developing the wild strawberry into the magnificent and delicious berry of today is like taking an old rough chunk of ore and developing it into a beautifully designed piece of gold. Strawberry plants are pretty much human. They are male and female, they eat, drink, assimilate and digest.

They sleep and work, and the more we treat them like living things the more graciously they respond. Strawberry plants have a liking for certain foods. The more nearly we supply their wants the more nearly we get what we are working for, and that's a big crop of berries.

I have learned that a man can have almost anything he wants if he wants it bad enough to work hard enough to get it. The way to get what we want with the strawberry is to study the likes and dislikes of the plants we are working with. Then we must feed and care for them according to their disposition.

I had not played with strawberries long until I became interested in experimental work. It was during these experiments that I discovered the affinity between the male and female plants. I learned, for example, that by combining several varieties in the same block, both the quantity and quality of the berries were increased. Even the bi-sexual varieties, which are a combination of both male and female, will do best when grown beside other bi-sexual varieties. Either the flowers of certain male varieties are more receptive to the pollen from other male varieties than their own, or the stigma or pistil of these flowers are not receptive when the anthers distribute their pollen of that same flower. I do not know why this is true, but I do know from experience that several varieties growing in the same block will give better results than when only one variety is grown alone. The pistillate or female variety will not fruit well without the help of some bi-sexual or male variety because the female is entirely dependent upon the pollen from the male variety.

PICKING THE STRAWBERRY CROP

The red fruits in this garden were grown with the use of overhead irrigation, covering the whole 120 acres of the garden.

For most of us strawberries in February are a table luxury. Yet it is in February that those who are planning to have a strawberry patch, large or small, begin to think of ordering their plants and deciding on what varieties to grow. The accompanying article by Mr. Beatty carries with it the authority of a specialist and much that is interesting to the strawberry grower.

A THOROUGHBRED PLANT

It is in full fruit with the lower foliage removed to show the number of berries. Each hill is large as a bushel basket.

New strawberry varieties come from seed, either through cross pollenization or happen-stance — mostly happen-stance. Ripe berries fall upon the ground, or birds will drop the seed, which results in many new seedlings each year. Whether these seedlings come through cross pollenization or happen-stance, there is no certainty about the results. We may try one hundred or one thousand seedlings before we find one as good or better than many other varieties already on the market.

Strawberry plants are propagated by runners, or nodes. The number of plants produced by a single mother plant depends entirely upon the characteristics of that particular variety. I have known a single plant of a certain variety to produce one hundred or more runner plants in a single season. Others will produce only ten or a dozen plants in the same length of time.

The June-bearing or standard varieties are more prolific in reproducing themselves than the varieties known as everbearers. This explains the scarcity and high price of these fall-bearing plants. The everbearers are an interesting species of plant life. No one can understand just how these plants can fruit almost continuously from early summer until late fall. They seem to have a fruit-producing organism of great endurance. Everbearing plants

set early in the spring will begin fruiting in August. As the season advances, the berries increase in size, quantity, and quality, and with proper care and proper feeding, these plants will continue to fruit heavily until freezing weather.

The first worth-while everbearing variety was discovered by Samuel Cooper, of Delevan, N. Y., in the autumn of 1898. This everbearing plant was found growing in with a variety known as Bismarck. At first Mr. Cooper thought this was a "sport" by bud variation from the Bismarck, but later on he decided that it was merely a seedling that just happened to be an everbearer, and which Mr. Cooper named Pan-American. Personally, I am satisfied that this Pan-American did come from a seed because it would be contrary to the laws of Nature for a standard, or June-bearing, variety to produce an everbearer through runner production. Any new variety whether everbearer or otherwise, can come only through the seed.

The Pan-American never became a universal favorite on account of its inability to reproduce itself. The plants seldom made runners, and about the only way it could be propagated was by dividing the crowns, which could never become profitable, either for the nurserymen or the berry grower. While it never became a popular variety, it was a great acquisition as far as the everbearers are concerned because from this Pan-American have come many other everbearers which have proved to be profitable for both the propagator and the fruit grower.

A MOTHER PLANT

This photograph of an everbearer shows the heavy root and crown system of the plant.

In later years, Mr. Cooper originated the Superb which has proved to be a profitable everbearer. The Superb was secured by crossing the Pan-American with other varieties. Following the Superb came the Progressive, which was originated by Mr. Harlowe Rockhill, of Conrad, Iowa. Today, the Progressive is a universal everbearer, grown in practically every nook and corner of the United States and Canada.

While the everbearers may never become a profitable commercial proposition, they have added much to strawberry growing. With them the strawberry is not only the first fruit to ripen in the spring, but is about the last fruit to ripen in the fall—a very long season for this most delicious and most healthful product of the garden.

Strawberries are very rich in both iron and lime, both of which are very essential in the building of blood and bone. When properly served it can be truthfully said that these are the most healthful of all fruits. Never combine sugar and cream with strawberries; use either cream or sugar. Strawberries and cream, with bread and butter and coffee, make a wholesome desert without any ill effect. Combining cream and sugar with any fruit is not good health practice.

Strawberries of any kind are delicious and healthful, but berries picked fresh from the vines are more healthful and more delicious than berries which have been picked before fully ripened. It's the last few hours of ripening that adds the sugars and flavor.

The strawberry has a wide adaptation. It is very hardy and succeeds in most all soils and under most all conditions. It is easily handled and can be grown with less work and less experience than most any other crop. Strawberries will succeed as well in shaded places as out in the sunlight. On account of its wide adaptation and the ease with which it can be grown, many families are now enjoying fresh strawberries of their own growing. Children, especially, should have all the strawberries they can eat because a growing child requires a large amount of lime and iron.

JUST STRAWBERRY

Like dogs, strawberries have pedigrees and this fruit of an everbearer has a noble and valuable one.

With the adaptability of the strawberry, the ease of growing this fruit, and the mysteries of these little human-like plants, is it any wonder that growing it is more like play than work?

Yes, I love the strawberry game because it takes me out in the open amid the wonders and beauty of Nature, introducing me to her many wonders, and because it pays in both health and in dollars.

King Canute sat upon the shore and commanded the seas to stop. Steadily and powerfully, they denied his power. As inexorably do the dunes of Indiana creep in upon the forest trees. But there is a power that can command the sands—the power of the protected forest and its sturdy roots. There is romance and drama in this article by Mr. Peattie, a young writer on botany.

THE DRAMA OF THE DUNES

By Donald C. Peattie

"DOOMED," said my friend, the naturalist, as we stood just below the crest of a gigantic dune at the head of Lake Michigan, in northern Indiana. "How strange to think that that century-old forest of oaks is doomed to a certain destruction."

"Doomed?" I echoed, and stared incredulously at the glen of trees below us, flaming scarlet, vermilion, and crimson, and standing as motionless in the crisp autumn air as a gorgeous stained glass window, and seemingly as permanent.

"Certainly," replied the great naturalist. "The sword of Damocles hangs over it."

"Look," he said, pointing a prophetic finger at the crest of the great sand dune which was on a level with our eyes.

I turned around quickly as though I feared to see this mysterious doom take tangible shape. But at first I saw nothing .

"And listen," said my friend. I could hear only the plunging of white breakers rolling gloriously up the shining beach two hundred feet below us.

And then I both saw and heard—heard the insistent ominous purr of traveling sand—"prrssssst"—and saw, against the light, the fine spray of particles that make the mighty dunes, blown inland like the spume from white-cap waves, or the threatening wisp of smoke from the fumarole of a volcano. It was the dune, moving.

Even as we stood there the sand had been pit-pitting against our high, sand-tight boots, piling up a tiny drift against the sides of our feet. I looked back, down into the glen, where in the sheltered still air, behind the dune, every leaf hung motionless and drooping, like old battleflags in a hall of state. There stood the giant trees, helplessly rooted to the spot, waiting the approach of a million million atoms which should destroy them.

For when free sand begins to move, its progress is as inexorable as the course of a glacier. A sixty-foot reinforced concrete wall would not stop a moving dune. In fact, it would, by offering a temporary barrier to collect the flying sand, merely enable the dune to grow larger before it over-rode the wall and moved on.

You could not stop a dune with dynamite, by blowing it to pieces, as a waterspout at sea is halted by a cannon shot. A dune already consists of tiny fragments which the prevailing winds would soon whip back into place. Nothing on earth can hold a dune in place except plants which cover the dunes with their roots.

A SAND DUNE ON THE MOVE

Here it is invading a dense glen of old oak trees, folding them in its embrace and dooming them.

So, century after century, it goes on, the ancient warfare between plants and dunes. Once a dune is thoroughly anchored with a great forest on its back, it may be considered fairly trapped, a giant bound with the thread-like, innumerable ropes of pigmies. But it is merely a sleeping giant, not a dead one. And it has just one chance for delivery, one ally more terrible than itself. And that is—Fire!

A match carelessly dropped, a campfire unextinguished, or burning off the underbrush "to improve the woods," and the beautiful forest goes up in a roar of flame and choking smoke. A really bad fire will burn right into the humus and destroy the roots.

Then the bonds of the giant are severed. Once more the wind whips him into fury, once more he rages across the land, revenging himself upon the forests.

When the long dry season

of the Middle West begins, from late August to early November, is the time that we who love the dunes fear for our glorious forests. Just when the leaves hang scarlet, gold and orange our thoughts turn anxiously to the colors of fire. For every year somewhere, sometime, one of that class of persons of whom one is born every minute, they say, sets the woods on fire. There are plenty of men, yes, and even women and children, who are willing to drop their work or their recreation in the dunes to fight the fire. But that is not always enough to check a fire gaining headway in a strong wind.

The entire dune area from Miller, Indiana, to New Buffalo, Michigan, has been burned over numerous times in very dry years. There is nothing like getting a lesson and making a mistake to teach one, and I learned about the ever present danger of fire in the dunes from a near-tragedy. When I was a total tenderfoot in the forest I built a campfire with a companion, only a very little campfire. I thought it safe because it was laid on cold, dry sand. But I failed to clear away the long grape vines from the vicinity, and as we sat quietly watching for the pot to boil, we discovered that the juniper scrub around us was on fire. It seemed to travel with about the speed of a bounding hare, and to spread equally in all directions like a ripple from a pebble cast in water. It took twenty minutes of the hardest work I ever did in my life to extinguish the little orange demons.

As I write now even the great tamarack and arbor-vitae bog which I can see from my window has dried up—that bog so full of water that, slipping off one of the floating masses of vegetation last June I nearly drowned. In September it is merely a deep bed of dried sphagnum moss—so like excelsior that it needs only a tiny spark to ignite it and destroy the most beautiful patch of conifers in the state.

MIGHTY OAK FOREST DOOMED

Trapped between two moving dunes each of them 150 feet high, it is being slowly engulfed in the sand.

THE SAND DUNE VICTORIOUS

Only the tops of the tallest oaks remain above the moving and engulfing mountain of the sand.

So it is that the apparent security one feels in a heavily wooded dune is but a precarious security. One hundred years of lucky safety may tomorrow be ended by fire or by some erratic change of direction on the part of the dunes. The sands turn in upon forests, moving perhaps very slowly, or sometimes with what is, relatively, tremendous speed. Several inches a day, perhaps, creeping, creeping, never resting, piling up all day before your eyes, piling up all night when everything but the wind is at rest, surrounding the ancient boles, reaching the lower limbs, choking the leaves, until at last only the tops of the great forest stick out. As you stand today on top of an active dune you may be walking a hundred and fifty feet above a one-time forest, just as in Tripoli the sands have buried a hundred feet deep the marble baths of Septimus Severius.

Then, some day, by chance the dune moves on again, and leaves the stumps of trees standing as if petrified, a pathetic wreck of a forest, more awful than the woods of France through which the shells of both armies tore for four years. Such victims do the dunes leave in the wake of their retreat from an "occupied area."

Fortunately the Indiana dunes imperil few human habitations, but in France, Denmark, Algeria, and many other countries, villages, old Roman roads, palaces, aqueducts and forts, have been swallowed entire. No man is strong enough to prevent one of these mountains from moving.

By studying the botany of dunes man has learned to make an ally of the pigmy foes of the sand. He has observed how plants win over dunes. First come the wild grasses, forming tufts and clumps, sending out fine rootlets, year after year dying and adding their mite of humus to the soil. Then follow the little shrubs, the wild plums, dwarf willows, sand cherries, juni-

pers, binding the sand and adding to the humus. A few pines spring up, then the poplars close to the lake shore, then the oaks, and at last the cool and lovely beeches.

The tree flora of the Indiana dunes is poor in variety, and there should also be many more individual trees than there are. Part of the dunes is passing under state supervision, which means that reforestation will take place. We can then imitate the splendid work of France in controlling her dunes on the Bay of Biscay. The French have used the beautiful marram grass for a first sand binder, then poplars and willows, junipers and pines. Their success has been complete, and has represented a saving of millions of dollars. It would be an excellent thing to add to the present Indiana dune forests some trees that are now rare or unknown there, such as the Russian poplar, the Siberian crabapple, the Atlantic coast beach plum, the black locust, and *Juniperus horizontalis*.

There are places, too, where the red-bud could be made to grow; the dogwood and tulip tree, already present, should be grown in nearby nursery plots and multiplied on account of their extreme beauty; ash, canoe birch, and linden, already present, are among the trees that on account of combined aesthetic charm and commercial value should be increased, and above all, this applies to the white pine, already found in some numbers, which for charm and usefulness takes rank with any tree in the world. It should be made gradually to supplant the worthless but picturesque gnarled and dwarfed gray pine (*Pinus divaricata*) that is now so abundant in the dunes. Except that this is the extreme southern outpost of that species and hence of interest to science, the grey pine need not be saved.

There is one thing to remember, however, when our dreams of how the dunes might look if properly reforested become too roseate, and that is that there is a limited amount of water and plant food available in a square rod of ground. Ecologists should work out just how many mature trees of a given sort the restricted life-resources of an acre of dune sand can be expected to produce. This will hold our imaginations down to the hard facts.

There is one other forestry experiment which might be tried in the Lake Michigan dunes: why not plant the chestnut? The chestnut blight has now ravaged our vast storehouse of this valuable tree from New England to North Carolina. There are still uninfected trees west of the Alleghenies, however. Suppose some of these were set out in the dune country, which is more than two hundred miles from the nearest natural chestnut groves and hence beyond the danger of accidental infection. If all the chestnut trees sent in were carefully inspected for disease and grown for a while in quarantine, and then a strict quarantine were maintained thereafter, we might still save our native chestnut, which otherwise has not a chance. The dunes, as a sort of island far removed from all other chestnuts, would be a safety refuge for the doomed monarch of our forests. At the same time it would help to stay the devastating march of the sand demons, burying as they go.

THE LAST ACT OF THE TRAGEDY

This is not a scene on the French battle fields, but the carnage of a moving Indiana sand dune.

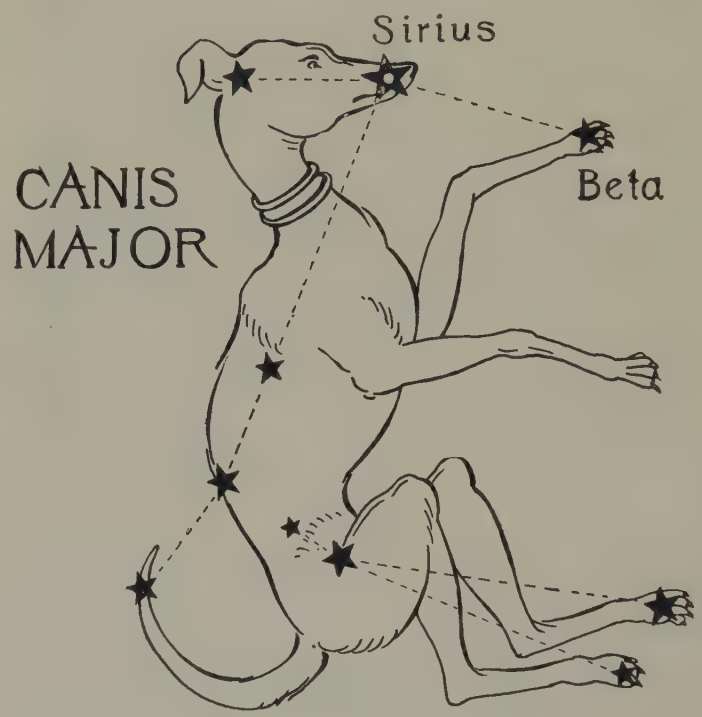
Canis Major, the Greater Dog

By Isabel M. Lewis

CANIS MAJOR, a Latin word meaning Greater Dog, is the name of the constellation following immediately after Orion and visible in the southeast in the early evening hours of February. To the northeast of Canis Major and not far distant is Canis Minor, The Lesser Dog.

These two constellations represent the two hounds that follow close on the heels of Orion as he strides across the heavens facing Taurus, The Bull, with uplifted club, while at his feet crouches Lepus, The Hare, on which Canis Major is keeping a watchful eye.

Sirius and Procyon, the brighest stars of these two constellations, are often called The Dog-Star and The Little Dog-Star respectively. Canis Minor is a very inconspicuous constellation on the whole for it contains but two bright stars, the brilliant Procyon and one star of third magnitude. Canis Major, however, contains in addition to Sirius, which is as you know the brightest of all the stars in the heavens, four stars of the second magnitude and two of the third. Sirius marks the nose of the dog, the star Beta is in his uplifted forepaw and the tip of his tail and back are outlined by bright stars while each of the hindpaws are marked by stars, one of the third, the other of the fourth magnitude.



Several thousand years before Christ, Sirius was known to the Egyptians as the Nile-Star and was an object of worship. Its hieroglyph, a dog, was often placed on monuments and temples in the country of the Nile. As it then rose with the sun at the summer solstice, just before the annual overflow of the Nile, which was of such vital importance to agriculture in Egypt, its influence was believed to be very favorable to agriculture. Among the Greeks and Romans, however, it was looked upon with disfavor because it rose with the sun during the torrid heat of summer and to its influence was attributed all the evils of that season. The unhealthy summer period in Italy from early in July until well into August received its name of the "Dog Days" from the supposed evil influence of the Dog-Star, and even down to the present time this name for the torrid days of midsummer has persisted as well as the old belief that during this period dogs are most liable to become mad.

Sirius and Procyon are both near stellar neighbors of our solar system. Sirius is distant nearly nine light-years or about fifty trillion miles from the earth, and Procyon about twelve light-years or seventy-two trillion miles. Both stars are also attended by massive but extremely faint companion stars, which were known to exist even before they were discovered in powerful telescopes because of the effect of their attraction or pull upon their brilliant neighbors. The combined mass of Sirius and its companion is over three times that of the sun. Sirius gives forth more than twenty thousand times as much light as its dim companion and about forty-eight times as much light as our own sun. It is an intensely white star, but is often seen to flash rays of red or green, like a diamond of the sky, especially when not far above the horizon. This is due to the effect of our own atmosphere in refracting or separating its light into rays of different colors. Procyon, called popularly the Little Dog-Star, is also a white star, though with a slight tinge of yellow. Although far inferior to the brilliant Sirius in brightness it is one of the twenty brightest stars in the heavens and shines brilliantly in the west in the early spring long after Sirius has passed below the horizon. Sirius crosses the meridian due south at nine p. m. on February 12, and Procyon at the same time in the evening on February 26.

At no time of year are the heavens more brilliant and beautiful than in the early evening hours of February when nine celestial jewels of the first magnitude, and many more of the second magnitude, appear above the horizon. As Deneb in the Northern Cross is about to pass below the northwestern horizon Regulus in Leo appears well above the eastern horizon, a promise that spring will not be many weeks in coming, for Leo is the leader of the constellations of spring. Among other brilliant stars now in view are, Aldebaran, Capella, Castor and Pollux, Sirius and Procyon.

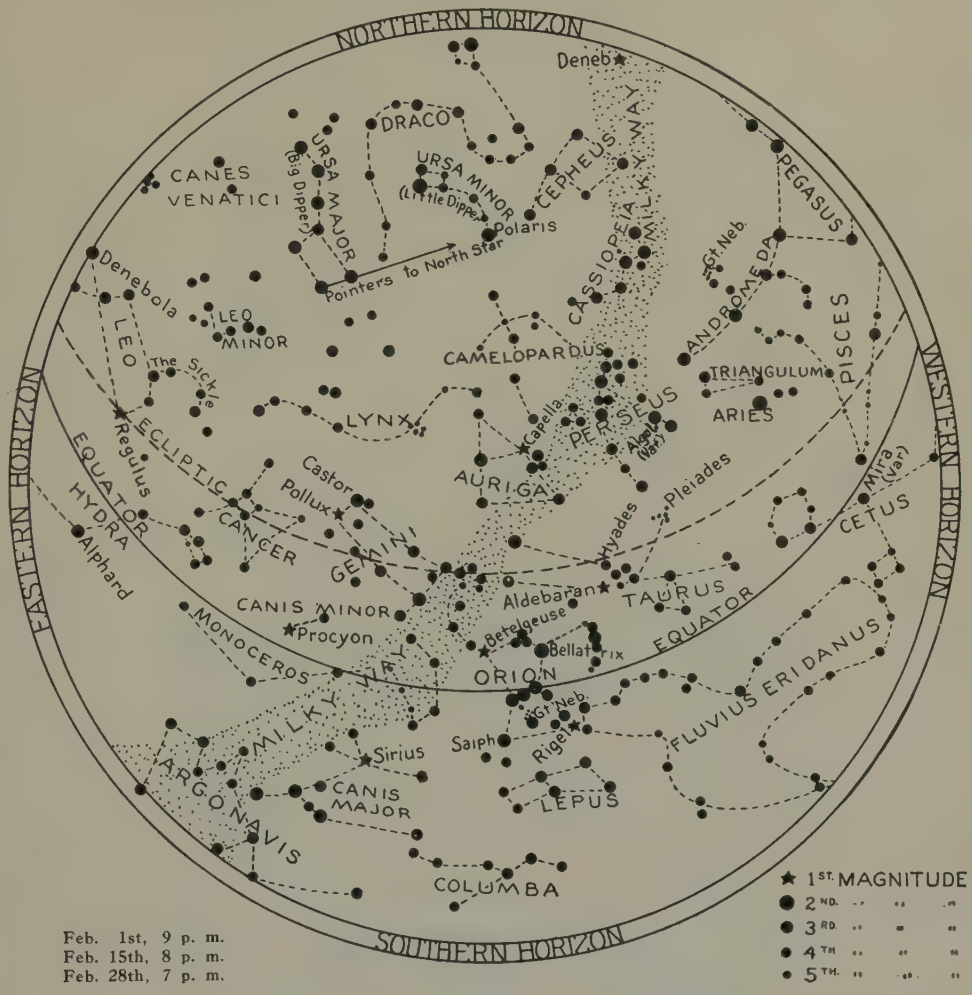
Orion is now at its best, on or close to the meridian in the southern sky, and contributes two jewels of the first magnitude to the adornment of the celestial canopy, the diamond-like Rigel and the deeply glowing ruby, Betelguese.

We would urge our readers to explore some of the beauties of the heavens with an opera glass, or preferably a good field glass or, if possible, a small telescope, at this season of the year.

Turn your glasses on some of the rich star fields in the Milky Way, especially in Perseus and Cassiopeia, on the groups of the Hyades and the Pleiades, on the Sword-handle in Orion, depended from the Belt of Orion, and containing one of the most magnificent objects in the heavens though requiring a greater power than that of a field glass to reveal

its many wonders. Yet one may see the Great Nebula as a fuzzy patch of light even with the naked eye and get a hint of the glories it holds in store for powerful instruments by turning a small telescope upon it.

Even with opera glasses it is possible to separate some of the double stars in the heavens that appear as single stars to the naked eye and one will find much pleasure and profit in becoming acquainted with some of the many interesting objects that are within reach of good binoculars. Then, too, one should not fail to take a look at the craters and so-called "seas" of the moon, which are not seas at all, but regions smoother and darker than their surroundings. Even with the slightest optical aid one will find much that is interesting on the scarred and pock-marked face of our satellite and nearest neighbor in space. Begin your observations as soon as the thin crescent appears in the west in the evening and follow up your observations, night by night if possible, until the full moon rises in the east at sunset when all shadows on the moon disappear, and details are lost to view in the vertical illumination from the sun at lunar midday.



Feb. 1st, 9 p. m.
Feb. 15th, 8 p. m.
Feb. 28th, 7 p. m.

To use hold over the head with top toward North.

This month we find that the two brilliant planets, Venus and Jupiter, that have added to the beauty of the western evening sky for many months have now disappeared from view. Venus comes into conjunction with the sun on February 7 when it passes from east to west of the sun or from the evening to the morning sky. Jupiter was in conjunction with the sun on January 25 and is now in the morning sky. Both Venus and Jupiter should be visible by the end of February in the eastern sky before sunrise. Earlier in the month they will be too close to the sun to be seen.

Mars and Saturn have been in the eastern, morning sky for some time and are now conspicuously in view. Saturn is in Libra a few degrees to the northwest of the ruddy Antares in Scorpio and on the fifteenth of February will be found on the meridian due south at sunrise.

Mars passes through Sagittarius during the month and is some distance east of Antares. It is very similar to Antares in color, but is now inferior to it in brightness. Antares, as we know, is called the Rival of Mars because the two are so similar in color and at times, when Mars is farthest from the earth, in brightness also. Mars is now approaching the earth and during the month of February its distance from us decreases from 187,800,000 miles on February 1 to 166,000,000 miles on February 28. By the first of April Mars will have increased so greatly in brightness that it will outshine its rival Antares. Again we will wonder if life is on Mars.

"Quick Doctor, the Saw"

By Emmet Dougherty

"THE MAN who plants a tree must have civilization in his soul. The man who brings flowers here and plants them near these beautiful buildings must have plenty of poetry in him. The man or woman without poetry is not fit to live here or anywhere else."

The Senator from Pennsylvania closed his address. Outside in the Capitol grounds a group of men leaned on their axes at the base of a beautiful elm. With them were blueprints showing the routes of new paths about the Capitol grounds. Sturdily in the center of a path-to-be stood the elm. The men were at work faithfully carrying out the orders of the blueprints. Senator Simon Cameron, later to be Secretary of War in Lincoln's Cabinet, came hurrying on his way to the Senate. He stopped at the sight of axes uplifted to fell this tree. Prevailed upon, the men delayed their work while within the Senator plead for the tree. Congress acted quickly and directed that the path be built around and not through the base of the glorious elm, now known as the Cameron Elm.

This tree is one of many rich in historical association abounding in the beautiful grounds about the nation's Capitol.

Intent upon prolonging the lives of some of these great trees, tree surgery of the most expert and skilled character has just been completed on the elms, oaks, beeches and hickories of this wooded embroidery. Under the direction of David Lynn, architect of the Capitol, and William A. Frederick, landscape gardener of the Capitol staff, the ravages of organic disease are being thus checked. The patients are assured of many more years of life.

Across the plaza from the Senate wing of the Capitol there is the Washington Elm, which is reported to be between 160 and 175 years old. Under it, we are told, the Father of His Country rested. On this and the Cameron Elm, major operations have been conducted with such success that both Mr. Lynn and Mr. Frederick estimate their lives have been extended for a great many years. Other historic trees in the grounds, which have required the attention of tree surgeons, are the two Vice-President trees. They are the shell bark hickory planted by the late Thomas Marshall, and the purple beech, which the late James Sherman planted. When presiding officer of the House, the late Champ Clark planted a sugar maple, his favorite tree, and a red oak stands as a memorial to the late James R. Mann, majority leader of the House. Other distinguished personages who have planted trees include the late Senator Henry Cabot Lodge of Massachusetts, former Senator S. Willard Saulsbury of Delaware, former Senator Elihu Root of New York, and Miss Jeanette Rankin of Montana, the first woman member of the House of Representatives.

The Cameron Elm, which is from 110 to 115 years old, was apparently in perfect health until this summer when the tree surgeons detected a spot on the bark, which indicated that at some time there had been an incision into the trunk. The interior was probed with an auger and conditions were found which eventually would have resulted in the death of the tree. The infected area was cleaned out, the cavity braced, sterilized and filled and the tree marked down for additional attention in the way of fertilizer and watering during the next few months.

THE PATIENT IS DOING WELL

A beech tree on the Capitol grounds that has been under the surgeon's knife and is well though patched.

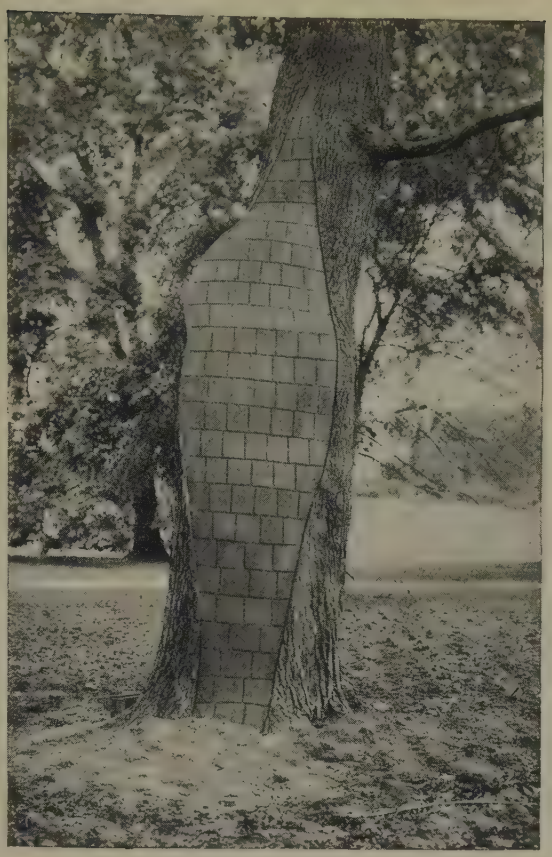
The surgery was authorized by a special act of the last Congress, which appropriated $5,000 to preserve the trees in the grounds, and was done by a nationally known concern. The method pursued in much of the work may be compared to fitting a human body with parts of a new spine, Mr. Frederick, who has personal charge of the work, explained.

"First," he said, "all the diseased area is removed, just as a dentist eliminates the decay in a tooth. Then the cavity is painted with a special paint. Concrete, just damp enough to mould in the hand, is then applied in layers of six-inch blocks, each being separated by a sheet of thick tar paper. This system is followed so that when a tree bends or sways the filling will not be cracked, but the blocks will slide over one another. The concrete becomes almost a part of the wood itself, absorbing its share of the moisture brought up from the

roots and discharging this into the atmosphere. The tree is then bolted together with steel bolts covered with galvanized piping. Like the dentist, the tree surgeon must be careful to keep moisture out of the cavity or he will be in danger of laying the germs for more decay."

The tree surgeon's success often depends on measurements as fine as a sixteenth of an inch, especially when dealing with the cambium layer of bark, the weblike structure just inside the main bark layer, which each year forms the new ring of growth. When this layer is removed all around, the tree cannot long survive. In the days of extensive clearing of land, the settlers often killed the trees, roots and all, by cutting deeply into the sapwood all around the trunk.

Another important element in the preservation of the trees in the Capitol grounds is the matter of "feeding," which consists of cultivating the soil over all the area covered by the branches on the theory that the roots spread out at least that far. This area is treated to manure, bone meal or special mixtures and is given plenty of moisture. Some of the larger trees are known to drink out of the ground as much as ten barrels of water in a day, and, after digesting the chemical food materials, with which the liquid has been mixed in the soil, discharge it into the atmosphere through its leaves. The tree, tree surgeons maintain, has practically all the attributes of an animal except the motor nerve system. It eats and breathes, and may have some animal-like nervous reactions.



A WOUND WELL HEALED

This illustration shows an unusually serious case but not a typical result of tree surgery.

The trees in the Capitol grounds probably thrive better than those anywhere else in Washington as a result of the constant care given them. The grounds are so underlaid with tunnels connecting the buildings that the roots do not have as much chance to spread as they should and the soil dries out quickly, requiring additional fertilizing and watering. The army of squirrels in the Capitol grounds also retard some trees. These little animals cut off twigs on the nut trees and elms, and increase the watchfulness that employees must maintain.

The collection of trees in the grounds includes many foreign types, but of recent years only American trees have been planted. It has been found that the domestic trees have deeper roots and thus have a longer life. Attention in selecting new trees also must be given the question of their fitting in with the architecture of the Capitol grounds.

The collection of trees is of great value in addition to the historical association of many of the types planted in the grounds. In the fifty-eight acres which compose the Capitol area there are eight hundred twenty-five trees, comprising ninety-three varieties, and more than thirty-five thousand shrubs. The trees include some exceptionally fine specimens of domestic growth, including elms, oaks, horse chestnuts, white birch, walnut, butternut, maples, and pecans. John C. Calhoun is credited with being the father of the collection. In 1853 he secured an appropriation of $30,000 to make a park out of the Capitol grounds.

Flowers of Frost

JACK FROST TURNS BURBANK

After seeing the photographs of the ice ribbons that appear about Cunila in the December issue of NATURE MAGAZINE, Mr. A. B. Scott, of Chicago, sends in these three taken last November in Marion County, Arkansas. They depart from the ribbon formation and are like pure white flowers of fine snow.

NATURE EDUCATION
Dr. E. LAURENCE PALMER, Cornell University
Director
MRS. ANNA BOTSFORD COMSTOCK Associate Editor

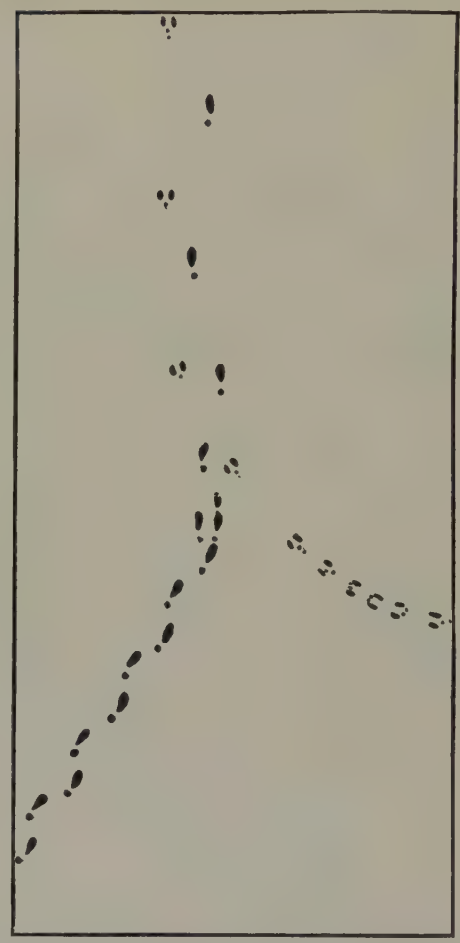
Tales of Trails and Other Things

By E. Laurence Palmer
Cornell University

WHEN Darius Green was inventing his wings of umbrella stays and the like, he could hardly believe that "the bluebird and phoebe" were "smarter'n we be." When he lit in a heap in a barnyard he changed his mind. If I tried to tell you that rabbits and skunks and squirrels were "smarter" than you in anything, you might disagree with me, but there isn't the slightest doubt but that the four-footed animals do some things that are not always most easily understood. If any of you feel that you would like to try to fly like a swallow, I would suggest that it might be well for you to first learn to run like a fox or a squirrel, cat or rabbit. As a matter of fact in some ways we can't begin to do the stunts that the commonest animals that live on the ground do. If you think that you can, then just try to imitate the animal that made the first tracks you may find in the snow, mud or dust.

Some of you may not live where you can find the tracks of animals other than men, horses, dogs and cats easily, so for the fun of it I am going to put in a drawing of some of the tracks that you might see if you lived outside of a large city. If you like these, I may give you some more another time. This time there is the story of at least one creature I want you to figure out for yourselves. The drawing of the tracks was copied from something I saw a few winters ago. One of the tracks was made by a boy and another by a smaller animal. You probably can figure out which way the boy went and whether he went slowly or rapidly in any part of his journey. The question is: Did he go in the right direction when he got to the tracks? What do you think about it? Would you have gone the way he did, or would you have turned to the right after stopping? Of course, if what I had drawn was a map, I should have said, "Would you have turned and gone east, or would you have gone north the way the boy did?"

That reminds me, too, if you want



Did he go in the right direction when he got to the tracks?

a little practice on learning compass directions, you might find it fun to figure out the directions taken by the boy and by the animal whose tracks he found.

There is a good way to figure out the name of an animal whose tracks you may find. If an elephant made tracks beside the tracks of a mouse, you wouldn't confuse the two, because you know that the elephant's tracks would be not only larger but the trail would be wider than with the mouse. Try to decide something about the size of the animal first then. If he is only about an inch wide, he will probably not leave a trail more than an inch wide. Such animals as shrews and mice would leave trails of this sort. If the animal is from three to five inches wide, his trail would be about that wide and the animal might probably be a squirrel or a cotton-tail rabbit. Animals larger than these are, of course, cats, jackrabbits, dogs, men, deer, horses, cattle, pigs and the like, but if you just remember to try to get some idea of the size first from the tracks, it will help you. This is particularly easy if you can find where the animal stopped. To be sure, when a fox walks his tracks are almost in a straight line, and a cat leaves quite a narrow trail, but in cases of that sort you can use the length to help you estimate the size of the animal.

After you have the size figured out to help you, other things must be noted. A shrew and a mouse do not move in the same manner, and a rabbit and squirrel do not move always in exactly the same way. Foxes, dogs, cats, skunks, men and other large animals all move in ways of their own, and the way they move tells you much about their dispositions. If they are alert and cautious, they move one way. If they are slouchy they move another, and it doesn't take much reason on your part to figure out which is which. Even men differ in the way they walk and the tracks they make. If you don't believe it, study the tracks on the sidewalks some morning, and see if you can't pick out the path of a slouch from that of some wide-awake man.

This little article is not about the tracks of men, of elephants or mice, though. What I want to help you with is the tracks in the puzzle. The animal whose tracks the boy found had at least four feet, because there are four tracks, and two of the feet were evidently larger than the other two, because they made larger tracks. I will leave it to you to decide whether the hind feet of the animal were larger or smaller than the front feet. The youngster shown in the picture on the next page has his hands in the posi-

tion the puzzle picture animal's front feet would have been and his feet in the position the puzzle picture animal's hind feet would have been, and he is facing as the creature would have faced when the tracks were made. This may help you decide which way the animal went on the puzzle page. If you want some fun, though, get in that same position with some of your friends and see if you can figure out how the creature got from one track into the next one. It is easy enough once you know how, and you may like it well enough to want to have a race with some of your friends, running as the animal ran.

We haven't yet decided what the animal is, though, and I'm not going to tell you. If you compare the size of the tracks of the boy and the animal, you may decide that it is too small for a dog, or possibly for a cat, and too large for a mouse or shrew. That might make you think it was either a rabbit or a squirrel, and it is. The question is, which is it?

What is the boy imitating? Try this position and see if your friends can guess.

Let me give you just a bit more help. I am sure you know that one of these animals can climb a tree better than the other. To climb trees, the front feet are most useful, and you may find for yourselves that it is easier to pull with both arms at once than to go up hand over hand. The tree climber usually puts both front feet down on the ground at once. The other animal puts down one front foot, then the other, then hops forward with his hind feet. What animal made the tracks in the pictures on this page, and what did the animal do?

Fifteen Interesting Things to Look for in February

THE SET of interesting things which I am giving you for this month are all based upon questions which have been asked me by child correspondents. It has been stated that curiosity is the cause of most mischief and of all knowledge. I trust that the curiosity expressed by these youngsters will not lead them into mischief but into worth-while knowledge. Some readers of this section may find that the reward for satisfying one's curiosity as to Nature's ways is merely increased curiosity. It is hoped that this section will never completely satisfy one's curiosity as to the topics raised but lead to further investigations on the part of the readers. It is not the plan at present to answer the questions raised, in succeeding numbers of NATURE MAGAZINE. The answers lie with the plants and animals about which the questions are asked. We might almost say "Go to the ant, thou sluggard," but we will not.

February is a month in which the tide of winter has definitely come to a turn. All signs by the end of the month point towards summer in spite of spasmodic efforts of winter to hold its own. Some of the things we may see in this month definitely point to summer.

1. The crows, that have for most of the winter taken life as they found it, in February begin to make plans for their home duties. They may mate and build their nests before the end of the month and consequently offer us plenty of opportunity for interesting observations. A child asked me what a crow meant when it said "Grrr." I shall leave it to you to try to find out what crows mean by the great variety of noises they make during this month.

2. Ducks and geese will be returning joyously to the north. Fortunately they will not be welcomed by the roar of firearms as used to be the case when spring shooting was permitted. The courtship antics of such ducks as mallards are well worth watching. Do the green-headed males make the advances or do the more somber females do the courting? Is it the rule among all the birds that are to be seen through the spring that the male courts the female or is the order reversed? If there are exceptions to the rule which you decide upon, keep them in mind.

3. Bluebirds will be back with us by the end of the month, but they do not always seem to be blue. Are they bluer when they are between you and the sun or when you are between them and the sun? If you find a bluebird feather it will offer you plenty of chance for experiments which will help you understand why you so frequently hear bluebirds without seeing birds that are blue.

4. Many of the bluebirds will come north so soon that they will be without food. However, even before the snow is off you may see the light brown male cankerworm moths fluttering on the trunks of trees. If you will investigate, you may find them mated with the wingless females which are on their way from the ground to the treetops where they may lay their eggs. A strip of sticky material may stop their progress, to be sure, but even then they will lay their eggs. These eggs will hatch out in a tumbler in the house, and, since you may find out for yourselves about the peculiar way the caterpillars walk, I will let you do so.

5. Mourning cloak butterflies that seem to be almost black may also be seen during this month. Watch one of them come to alight, and then explain why it is that you do not see them on every trip you take at this time of year.

6. While hunting for these mourning cloak butterflies in a snowy woodland you may notice the trails of tiny deer-mice. Generally they show a dash-like track made by the tail in addition to the tracks made by each of the four feet. The direction in which this tail strikes the ground when the mouse turns a corner may be interesting to you in connection with understanding why a long tail is useful to these animals. It may also be useful to you in understanding something of the habits of a dead mouse which you may find but whose name you do not know.

7. Dog tracks and cat tracks may also be found in the snow at this time. Since most of you may have the opportunity to watch a dog and a cat actually make tracks, I am going to let you find out for yourself whether or not these animals are alike in the manner in which they put their hindfeet down in relation to where their forefeet were. Incidentally you may notice that there is a difference in the claw marks left by these two animals. Also it might be worth your while to measure the length and width of the tracks of the forefeet of many dogs of your neighborhood and see if you can get any ratio between these mea-

surements and the height of dogs at the shoulder or of their weight. If you ever become a Nature detective, this information may be of use to you.

8. While dogs and cats are able to live out of doors in winter, some animals may not be so fortunate. For example, near a spring you may find the stiffened body of a frog that came out a bit too early. Is there any reason that you can find why a frog might be liable to come out earlier near a spring than away from it? Is there any reason why it should be profitable for him to remain near the spring after he came out?

9. In some parts of the country snakes will be coming out of their winter quarters in February. A child asked me if a snake closed its eyes while it slept through the winter. See if you can find out what the answer to this should be. If you can find a skin shed by a snake, this may help you.

10. In many parts of the country the winter's ice will begin to "go out" during these months. It will scour the bottoms of our brooks and rivers almost as clean as a pavement in some places. Try to find out for yourselves how any life can live in such places under such circumstances.

11. The driving ice at the bottom of a river may have a smaller counterpart in driving snow in the air above. See if you can find any evidence left permanently on objects by wind-driven snow.

12. In spite of ice-filled brooks and rivers, crayfish will in many cases begin mating for the season. A quantity of live crayfish brought into a room in school should give you plenty of opportunity for a study of this sort. After mating, the males may die and the females lay their eggs about three weeks later. Do crayfish feed during the time they are interested in mating?

13. A child asked how weeds grew from soil in which there were apparently no seeds. To find out about this take two cigar boxes of soil such as she described. Put one in the oven and bake it. Put both of them in a situation ideal for growing plants and see if all the seeds apparently didn't seem to have been in the box that was not baked. It may interest you to look through soil to try to find some of the weed seeds hidden therein. To help you in identifying your find you will find it useful to own a copy of the bulletin, "Testing Farm Seeds in the Home and Rural School." This is a Farmers' Bulletin published by the United States Department of Agriculture at Washington, D. C.

14. The bulletin just mentioned may be useful in looking over and testing the seeds that you may wish to plant this spring. All seeds are not necessarily good seeds because they happen to look that way. If they won't grow, their looks will not save them, nor you. It might save you some labor if you look around the toolhouse or wherever you keep seeds and such things and find some remnant seed packets of years gone by. Count out about a hundred seeds from each of these packets and place them between moist blotters. Put them where the temperature is mild and after awhile—that is, a few days later—look between the blotters and figure out what the probable percentage of germination is. Write this percentage on the proper packages and use the information when you come to plant your garden later. It might be worth while, if you are planning on buying a large quantity of seed from a merchant, to test a handful for yourself and decide whether you can afford to buy low-priced seed always.

15. A child wrote asking why evergreens don't shed their leaves as other trees do. Examine an evergreen carefully and find out for yourselves whether or not they shed their leaves. You may find the evidence on the ground beneath or on the older branches of the trees themselves. If you compare the leaves of evergreens with the leaves of other trees, you may get some generalization which will help you in answering the child's question.

Nature Study in Relation to Happiness

By Charles Lincoln Edwards

Director of Nature-Study, Los Angeles City Schools

EVERY child demonstrates a dominant interest in animals and plants. Each child is from that hypothetical Missouri whence all inquiring minds come, and it is our opportunity to assist him in the endeavor to satisfy his eager desire for knowledge. We are obliged to tell pupils what astronomers have discovered through the telescope and by mathematical calculation of the enormous size and incomprehensible distances of certain stars and of their composition as revealed through the spectroscope. The stars cannot be touched and handled. The child should determine through his own senses the relative hardness of minerals, as quartz, soapstone and clay, how soil is made from decaying rocks, the differences between rabbits and guinea pigs, linnets and English sparrows, butterflies and moths, oaks and maples, and the various shrubs of the chaparral. We should never rob anyone of the impression and happiness following original discovery.

Allow the child to talk about some mountain he has climbed and loved. Encourage him to describe particular objects and incidents; a snow-capped peak encircled by aged, dwarfed pines at the snow line, a doe and her fawn among the giant firs below, statuesquely examining the intruding stranger, a blue-fronted jay dashing and squalling from pine to cedar, and the sweet incense of all the conifers. Through the mysterious channel of memory, images will crowd into the child's mind, wildly clamoring for expression. Then have the narrator write the story. Before the material has been given final form, read the description of a mountain by John Muir in order that the child may be stimulated by the spirit of a master to touch up his own picture here and there. This finally results in a creative effort important beyond measure in the esthetic development of the child.

Most children are widely interested in Nature and, following suggestions, will develop enthusiasm for almost everything from stars to seaweeds. Often a child will be enthralled by some particular obsession and devote every spare moment to rocks or shells, ants or birds, weeds or trees, or any one of the thousand Nature subjects at hand in the neighboring region. He must be encouraged to reinforce his instinct for collecting by careful and continued observation and investigation of the things in their natural environment and the reactions and adjustment of the living things to the various conditions of that environment.

Children are tribal. They love to socialize their interests. Thus, wise principals are encouraging pupils to segregate in accord with their special interests. They form clubs; seaside, mountain, mesa, and park clubs, if it is proposed to explore one or the other locality; and mineral, fern, wildflower,

tree and shrub, insect, reptile, bird, or mammal clubs as the dominant interest lies in one or the other of these broad divisions of Nature. Special groups who have dogs, cats, chickens or pigeons may study the varieties derived from selective breeding, the care and training of their pets, the evidences of smartness, even of the power to reason which these mammals and birds manifest. In a school show of dogs, cats, chickens, or pigeons, all of these creatures and their qualities may be widely exemplified. The formation of clubs, not only of Nature but of all of the subjects alluring to children, will be a solution of the problem of the occupation of their leisure time.

It is important to develop leaders. Of these there are two types. The one, whose nature inspires confidence in his unselfish devotion to the cause; his ability to organize its work and execute a clearly defined policy. Such a leader does not seek the office but accepts it as a social responsibility. The other kind of leader, whose ambition is to gratify the instinct to be at the focus of the spotlight, to run things, to be president of the club, may work against the real educational purposes concerned. This petty autocrat of small politics, who makes all around him suffer under his self-imposed domination, frequently grows up into the same kind of pernicious pest. A system which affords opportunity for the development and display of such a nature ought to be eliminated. The chairman for each meeting of a club should be taken automatically, following the alphabetical list of members. This divides the work, invites competition in planning and carrying through the best program, and develops intellectual, rather than political, leadership.

The best of the collections, drawings, photographs, stories, poems, and other results of the efforts of the various clubs are exhibited in the cases of the school Nature room or hall. At the end of the term or year a special exhibition is held. Each young naturalist brings father, mother, brother, sister, or other relations and friends to see the specimens and listen to the stories of the club members of their marvelous adventures of which the specimens are merely testimonials. Occasionally a Congress of Nature Clubs is held in some large, central auditorium for the discussion of general problems, to hear an address by some distinguished naturalist, or to see an inspirational film.

Nature Study Hints

Suggestions for the use in Nature Study of the articles in this issue of NATURE MAGAZINE

By ELIZABETH K. PEEPLES

Teacher in Charge of Nature Study, Washington, D. C., Schools

Road Runners Whether road-runners are studied from observation or as birds of a distant region which may be known through reading, photographs, and museum specimens, they present many points for contrast and comparison with other birds. Here are some questions which the class should answer after studying the article.

1. What neighborhood bird warily slides out of sight of those who approach?
2. What familiar bird freezes to avoid discovery?
3. What do most birds do when pursued? Can you name any that would race with a man as the road-runner did?
4. How do most mother birds reach a nest built in a tree?
5. Where do birds that travel chiefly on foot usually build their nests?
6. What is surprising in the mother road-runner's method of reaching her nest
7. What have you seen parent birds feed their young?
8. What tactics have you seen mother birds resort to when human beings approached the nest?
9. What birds can you name that wear crests? What do they express with them?

Find NATURE MAGAZINE for July, 1924, and compare the pictures at the top of page 24 with the first illustration of this article.

The Drama of the Dunes Children living within reach of sand dunes should visit them, observe the movement of the sand particles, collect specimens of as many plants as they find growing upon them, and keep a record of the progress of a dune during a year by measuring its height against a tree from time to time. They should if possible discover what effect the moving dune has upon trees which lie in its path, and by what force, if any, it is held in place. The double damage done by fire to forests growing on sand dunes should be discussed. A school tree nursery should be established, and trees of the varieties recommended raised and transplanted in favorable locations on the dunes. In regions where there are no sand dunes the article should be used as supplemental reading by classes in geography and forestry.

* * *

Bright Eyes—A Marmoset Pet To really know and love one live animal profits a child much more than to study many at a distance or from pictures. The pet show to which each pupil contributes his particular pet is a fine beginning for animal study. Following the general exhibit the animals should be brought back to school one at a time for detailed study. Here and there a pet monkey will be brought in. After observing and discussing it the class should read the article on the Brazilian marmoset. The most important lesson learned from any pet is the one emphasized by the author, gentleness. In no other way do children so surely learn the law of kindliness as by caring for animals.

* * *

Silver Fox, Prince of Fur Bearers This story of the silver fox brings home dramatically the treatment accorded by Avarice and Vanity to fur-bearing animals. The history of the "prince of fur-bearers" is in effect that of the beaver, marten, and otter. The class in Natural Science may readily correlate the study of these creatures with Social Science, since they have "done their full share in the development of the wilderness," the hardy trapper being followed by the trader, the missionary, the explorer, the farmer, and the manufacturer. Nature students of fifth and sixth or higher grades should write to the U. S. Department of Agriculture for bulletins on fur-bearers and fur-farming, comparing the life history of other creatures with that of the silver fox. There is opportunity here for a discussion of the ethics of trapping. For older pupils the problem of heredity presented by the black and white offspring of red fox parents, by the so-called cross fox, by the black phase, and by the predominance of silver foxes in the litters of silver fox parents challenges attention.

OPOSSUM
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BROWN THRASHER
Remsen Brinckerhoff
Englewood, N.J.
JENNY WREN
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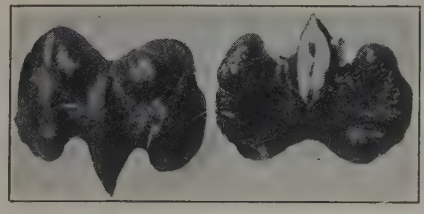

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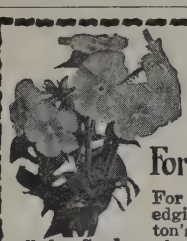

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"My Dog Pat"

The frontispiece of this issue is not the work of a professional photographer but of a young man with innate photographic taste and way with a camera. He is Mr Gregory L. Oliver, of the Miami Copper Company, Miami, Arizona. In "My Dog Pat" he has done an appealing study, and we have several others for the future. To forestall inquiries such as we have had in the past as to where copies of this picture in the original of this photograph can be secured, Mr. Oliver has agreed to finish up in a soft finish photographs 9 x 11½ inches, mounted and mailed for $2.50 each.

An Ancient Lily

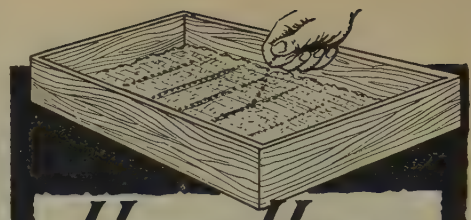
The Madonna lily, *Lilium candidum,* is one of the oldest lilies in cultivation. Since early in the Christian era it has figured in the annals of the church, variously called Annunciation lily, St. Joseph's lily, Lent lily, and Madonna lily, and until 40 or 50 years ago it was the characteristic Easter flower.

Available information relating to the species has been useful to the grower of the plants rather than the producer of the bulbs. To meet this need, the Bureau of Plant Industry of the United States Department of Agriculture has prepared a new department bulletin, No. 1331, The Madonna Lily, by David Griffiths, horticulturist. According to this bulletin, few lilies excel the Madonna in respect to rapid multiplication.

It increases naturally by a division of its bulb, an efficient method, but not quick enough for the commercial grower. Associated with this natural division of the old bulb is another propagation from the old loosened and injured outer scales which break off in handling. These scales give rise naturally to bulblets, which "grow up" in two or three years. This method is very much to be preferred to all others, as it is very rapid and certain, if properly applied. It is fully described in the bulletin.

The third method of increasing the stock is the stem method. This consists of layering the bases of the old stems in comparatively dry sand for about three months, after the flowers are cut, until bulblets form and begin to grow roots.

The bulletin advises the producer on the best soils and climate, methods of planting, cultivation, and handling the bulbs when they are ready to market.



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All prices f.o.b. plant
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FREE Booklet, "Soil Improvement"

Tells how to have greener lawns, lovelier flowers and more productive gardens. Precise instructions; beautiful illustrations. Write for your copy today.

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Giant Zinnias *in Autumn Colors*

Immense flowers, colored like the Oak and Maple leaves in the fall, long, strong stems that are fine for cutting. Our Autumn mixture 15c a pkg. of seed—2 pkgs. 25c.

Other new Zinnias—Oriole, orange and gold, 50 seeds, 15c. Exquisite, soft pink, 50 seeds, 15c. Crimson Monarch, brilliant red, 50 seeds, 15c. One pkg. each of these four 45c.

Our Seed Book is ready for you—it pictures and describes many new and greatly improved flowers and vegetables you will want in your garden. Send for it today. It's free.

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5 Garden ROSES

On their own roots. Sure to bloom.

Rainbow Collection
Edel—old ivory
Lady Ursula—flesh pink
Mrs. H. Winnett—crimson
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My Maryland—pink

Mailed Postpaid $1 to any address. Guaranteed to reach you in good growing condition. All G&R roses are grown in large quantities, which enables us to sell them at moderate prices.

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Largest rose growers in the world.
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GLADIOLI—HIGHEST QUALITY

WE have them. YOU want them
A card brings you descriptive catalog
E. M. BUECHLY, Box A, Greenville, Ohio

It states that the Madonna lily is subject to few serious plant diseases or insect enemies. The bulletin may be obtained while the supply lasts by writing to the United States Department of Agriculture at Washington, D. C.

The Forester Reports

The most significant change in the nation's forest situation within recent years is the degree to which timber growing has become a matter of general interest and understanding, declares William B. Greeley, Chief Forester of the United States, in his annual report to the Secretary of Agriculture.

"National progress in forestry will from now on be measured, most of all, by the rate at which timber growing becomes part of everyday land usage," states the report, which further emphasizes the outward spread of forestry as evidenced by many current trends. Public leadership, and economic forces are contributing to the marked evolution in forest land management, Mr. Greeley believes.

Evidence that the possibility of growing successive crops of timber on privately owned land as a business has aroused the interest and is receiving the attention of forest industries throughout the country, is abundant and convincing, states the report.

"There is no doubt," declares Mr. Greeley, "that forestry as a public movement is being converted into forestry as an industrial practice. One has only to read the trade journals, attend the conventions of lumbermen, pulp manufacturers, and naval stores producers, or to examine the correspondence of state and federal forestry agencies to see the change in the attitude of large land owners toward forestry.

"The forestry laws enacted during the 1925 sessions of the state legislatures are proof that the states are steadily developing and completing their forestry policies.

"It is all a part of the outward spread of forestry in the United States. State forestry laws have a close relationship to the cooperative federal forestry policy established by the Clarke-McNary law and form an essential part of the national program."

Geese Picture Inspires

Poetic inspiration was given the students in one class in the Crocker School, Fitchburg, Mass., by the colored insert, "Canada Geese," in the November issue of NATURE MAGAZINE. Miss Isabel Dennett writes that the students took the picture as a subject and each composed poems out of their reactions to it.

A Garden Full of Gladioli

The Gladiolus is one of the most satisfactory flowers grown—it is as easy to grow as the potato. Every family can enjoy this grand flower. They bloom from July to frost if you plant a few bulbs each month from April to July.

Special $2.00 Offer

For **Two Dollars** we will send **50 Bulbs** of our **Grand Prize Mixture**, which covers every conceivable shade in the Gladiolus kingdom.

Special $6.00 Offer

100 Choice Named Varieties (*Catalog Price $9.00*)

For those who plan their Garden according to a color scheme, we offer 10 Bulbs each of the following 10 choice varieties:

Evelyn Kirtland, *Rosy Pink;* **Flora,** *Finest chrome-yellow;* **Le Marechal Foch,** *Fine salmon-pink;* **Mrs. Frances King,** *Vermilion;* **Mrs. Frank Pendleton,** *Deep salmon;* **Orange Glory,** *Rosy orange;* **Panama,** *Rose-pink;* **Peace,** *Splendid white;* **Schwaben,** *Finest canary-yellow;* **War,** *Deep ox-blood red.*

Order Your Bulbs Now, so as to have them to plant when you begin making your garden.

Simple cultural directions in each package

Mention this advertisement and send Check, Money Order, Cash or Stamps, and secure either one, or both, of these splendid collections, sent prepaid to any point in the U. S. east of the Mississippi. **For points West and Canada add 25c for the $2.00 collection or 50c for the $6.00 collection.**

Our 1926 Spring Seed Annual sent on request

Stumpp & Walter Co

30-32 Barclay St. New York City

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Perennial plants from Huntington's seeds. We grow, gather, clean and import, and know perennial seeds better than any other concern in the trade. If it is a good perennial we have it. Free list.

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Have More Birds This Winter Than Ever Before

$1.00 brings you

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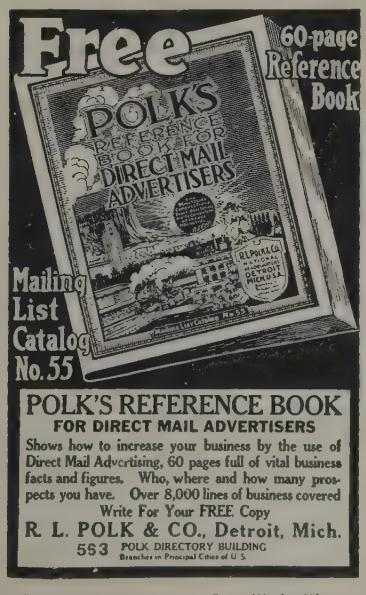
HOWES-INSECT-FOOD-CAKE

A rich cake filled with rich Insect Food for Birds. Send now. $1.00 each.

ARTHUR G. HOWES, Glory Hill, TOMS RIVER, N. J.



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Branches in Principal Cities of U. S.

Doubles Closet Space

The Get-at-able Wardrobe **DORAK** *hangs from top of the door without interfering with opening or closing. Also can be attached to wall.*

Gives you a hat or shoe shelf, a bar for skirts or trousers, two other bars that will hold 8 clothes hangers, 6 hooks for other articles. Made of tempered Aluminum. Weight only 18 ounces. Rust proof.

Sent postpaid in U. S. for . . . $3.50

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ESTABLISHED 1810

GALLOWAY POTTERY

Bird Bath No. 662, 25" high, as illustrated in light stony gray, $21.00, f.o.b. Philadelphia.
Our collection of high-fired, strong and durable Terra Cottas includes shapely jars, flower vases, pots and boxes; gazing globes, sun dials, benches, etc.

Illustrated catalogue showing 300 interesting designs will be sent for twenty cents in stamps.

GALLOWAY TERRA COTTA CO.
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Waterlilies for Northern Gardens

There's no good reason why warm climates should have all the rare flowers. Waterlilies can be grown successfully anywhere south of Quebec, if the right kinds are chosen. Two score varieties, in colors varying from white to deep rose, crimson, lavender and yellow, can readily be grown in your garden.

Let My Catalogue Be Your Guide

Hardy Waterlilies for tubs and pools are described and pictured; directions for growing are given, and plans for pools shown. Send for this booklet.

WILLIAM TRICKER
669 Forest Street
Arlington, New Jersey
Largest Grower of Aqualics in America

Advertising in
NATURE MAGAZINE
Pays

What Is a Yosian?

In the January issue of NATURE MAGAZINE, this department asked in a note, "Are You a Yosian?" Let us tell you now what a Yosian is, and in the telling there is an interesting story. The *New York World* has been running for some time a daily Nature story entitled "News Outside the Door." It used to be signed J. O. S., and other newspapers, recognizing the growing public appreciation of what was outside the door, took it in syndicate form. Now, the J. O. S. stands for J. Otis Swift, Nature editor of the *World*, whose wont it was to lead walks of the metropolitan walking and Nature clubs, talking Nature as he went. The numbers of walkers grew, and J. O. S. created an imaginary order of ancient Nature philosophers, calling them the Yosian Brotherhood—appertaining to Josiah, spelled as in the Hebrew with a Y.

"My purpose is to do Americanization work by teaching a love of the soil and wild things; to give lonely men and women in the city a chance to get out with friends in the beauty of the wilderness, and to inspire a broad understanding of Nature in all her works," J. O. S. tells us. "I talk, as we go through the trails, about trees, birds, plants, minerals, insects—everything we see. People of all races and creeds come and come again. At lunch beside a spring, campfire songs in many languages are sung; faddists talk upon their specialities; not infrequently we get deep in philosophy, mythology or the like. Experts in many lines are beginning to come and talk also."

Antelope in Texas

So rapidly have the antelope been exterminated in Texas, that measures have been carried out by the Game, Fish and Oyster Commission of the state to protect and restore them. There remains at this time only about three herds in Texas and all of these have been under private protection for several years. The game preserves of the state are now being restocked from these few remaining herds. The Commission captured fourteen little antelope this past summer and fed them from the bottle until large enough to eat. All lived and have been placed on various preserves to multiply. Other states of the Southwest where the antelope roamed at one time are also taking measures to restock their state

25 GLADIOLI BULBS FOR $1.00

Large blooming size. All labeled and selected to cover the entire color range of the Gladioli family. **200** bulblets free if you mention NATURE MAGAZINE. Write for Catalogue describing **75** Varieties of the world's finest Gladioli.

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Stevensville **Michigan**

Deal Direct with a Reliable Grower

WE GROW OUR OWN TREES. We have no agents; our catalog is our only salesman. We can save you the agent's commission. We do a strictly cash business; you do not pay for others' bad debts. For these reasons we are able to quote "Prices as Low as Consistent with Highest Quality."

EVERGREENS

77 Varieties—1 ft. to 20 ft.

Rosedale Evergreens are frequently transplanted, so as to develop masses of fibrous roots. Our soil is the right texture for the root balls, carefully burlaped, to reach you in solid form. Such Trees are bound to succeed.

Transplanted Fruit Trees

Fruit Trees of bearing age which have been transplanted so as to stand moving will save you years of waiting. Choice varieties.

Shade Trees, Shrubs Roses

Large, shapely Deciduous Trees that will produce immediate shade. Evergreen and Flowering Shrubs in ready-to-bloom sizes. Heavy field-grown two-year Roses.

Write for 1926 Catalog

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"IN the Garden of Your Dreams" is a song you can make come true. Dreer's 1926 Garden Book will help you, with its wealth of pictures and suggestions. Everything in Flower and Vegetable Seeds, Lawn Grass, Roses, Dahlias, Hardy Perennials, etc.

A copy mailed free if you mention Nature Magazine

HENRY A. DREER
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Earliest Tomato

is Jung's Wayahead. Big red fruit ripe as early as July 4th. Nothing earlier to be had anywhere. As a special offer will send you a pkt. of this Tomato and pkt. of Cabbage, Carrots, Cucumber, Lettuce, Onion, Radish, Parsnip, Superb Asters and Everlasting Flowers, all 10 pkts. for 10c. Coupon worth 10c free with each order. Money back if not satisfied. Catalog of Seed Bargains FREE. Send today.

J. W. JUNG SEED CO., Sta. 12, RANDOLPH, WIS.

When you think of Seeds think of

Schling's Seeds

There are seeds and seeds—good seeds, bad seeds, and seeds in between—and they all look pretty much alike; but, oh, the difference in RESULTS!
Schling's Seeds planted right never disappoint!—for they are grown, selected and classified by men who have given a lifetime to this absorbing art. They are produced for flower-lovers who come to us year after year assured of the same unvarying quality.
To prove these facts to you and make you another Schling enthusiast, we offer the following

EXCLUSIVE FLOWER COLLECTION

A $3.75 Value for $3.00

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Schling's Wonderful New Snapdragons Indian Summer, will rival the gladioli in size and vigor; marvelous rich velvety copper red.....	$1.00
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Schling's New Hybrid Senecios, in five colors, beautifully quilled, double flowers resembling the double Cineraria. Easily grown, lasts all summer. A charming flower in the garden and for cutting.....	1.00
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Schling's Candelabra Salpiglossis, upright, like the Delphinium, with the largest flowers in exquisite colors, beautifully penciled and veined.....	.25
Schling's Exquisite Dahlia-Zinnia, Tyrian rose.....	.50
	$3.75

Insures uniform distribution of all fine seeds

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Many other choice novelties in our Book for Garden Lovers. 25c the copy
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FREE CATALOG NOW READY

Its chapter on the culture of Dahlias is worth any Dahlia lover's time. And it matters little which type or form of Dahlia you prefer, you are reasonably sure of finding it offered in my catalog—at prices more reasonable than those quoted elsewhere, *because* I do grow them by the millions.

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The World's Largest Dahlia Grower

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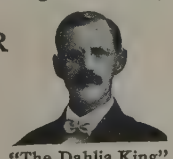
East Bridgewater Mass.



"The Dahlia King"

Wood Duck Protected

Reports emanating from Florida to the effect that the ban on the killing of wood ducks has been lifted is vigorously denied by the United States Bureau of Biological Survey. Under the treaty with Great Britain on migratory birds, wood ducks are given special protection. Open seasons must be declared only by the President of the United States, and state or local laws are superseded by Federal treaty. Persons killing this beautiful bird are liable to a fine of $500 or six months imprisonment or both.

For the Starling

A voice is raised for the starling, variously designated as a pest in some quarters, in a recent issue of *The Universalist Leader*. An editorial note says in part: "In November and December, when the dark gray days come, and trees are bare, and most of the birds have followed the crowd to Florida and beyond, the starlings gather on the feeding porch just outside the study windows. In the gloom of the shortest days of the year, they whistle, they run, they box with one another to keep up their circulation, they attack the suet with right good cheer and then make full speed for the bath just released from solid ice. They are like a tonic to a jaded scribe. They are like a bugle blast to the soldier faltering in the ranks. They sound a call for us to grasp life boldly and believe in it fully, and live it completely. They are an antitoxin for the poisons we absorb from a half effete civilization."

Laugh on Sir Robin

By Cynthia Lawrence

One summer our tomato plants grew so dense that we placed sticks here and there amongst them, holding the branches secure by fastening strips of cotton cloth first to the sticks and around the plants. It so happened that the following spring found one of the sticks, with its corresponding strip of cloth, still lying in the garden. One day I observed a nice fat robin pecking away at the cloth. He evidently very much wanted that nice strip of cloth for building material, but it was fastened tight, and after several strenuous attempts to unfasten it, he flew away to the tree across the road, with the thought in his mind no doubt, that the Mrs. would assist him. But while he was away, I hurried across the lawn, and unloosed the cloth from the stick, and dropped it to where it had before lain. Then I sped away. Soon Sir Robin appeared, with the Mrs. at his side, and they alighted in the garden. Right merrily they hopped around the

Burpee's Seeds Grow

TO ANYONE at all interested in growing vegetables or flowers, **Burpee's Annual** is a fascinating book; much more than merely a catalog of seeds and bulbs.

It tells you *when* and *how* to plant the appetizing vegetables and exquisite flowers you look forward to having in your own garden; and gives you a wealth of assistance in choosing the most pleasing high grade varieties.

There is a solid half century of experience and continuous development back of Burpee's Seeds—the Best Seeds that Grow. And the prices are extremely moderate.

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The World's Greatest Garden Book

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Everything for the Garden—Evergreens—Shrubs—Trees—Vines—Roses—Perennials—Iris—Peonies—Phlox—Gladioli—Dahlias—Garden Tools and Furniture.

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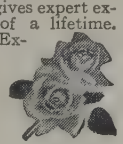
ROSES *of New Castle* is the title of a beautiful book on the culture of roses and other plants; gives expert experience of a lifetime. It's free. Exquisitely illustrated in natural colors; offers and tells *how to grow* these famous plants. Write for copy.



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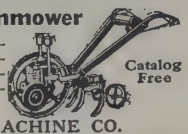
A Practical Proven Power Cultivator for gardeners, suburbanites, Truckers, Florists, Nurserymen, Fruit Growers, Country Estates and Lawnwork.



Catalog Free

AMERICAN FARM MACHINE CO.
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cloth, chirping as they did so. I imagine that he was explaining the difficulties that the situation held. At last he seemed to brace his feet, and gave the cloth a pull. Up it came! I could see—I was sure—the surprise in his eye, and also the laughter in the eyes of the Mrs. as they flew across the road, and into their tree home. And someway I fancy that the summer was none too long for him to explain to his dear little wife, *just why* he had called for her assistance that morning in the garden!

Mistletoe Immunity

It is estimated that on about 100,000 acres of the Rocky Mountain region the yellow pine trees are mistletoe-infected. Director C. G. Bates, of the Rocky Mountain Forest Experiment Station of the United States Forest Service, is, therefore, much interested in the possibilities of a strain of pine immune from mistletoe. He believes this has been discovered and can be propagated. Two years ago Director Bates noted and marked two young specimens of healthy yellow pine, noticeable among their fellows for their straight, slender stems and absence of heavy branches. This was in an area where mistletoe was heavily infesting other trees in spite of repeated pruning. Two older trees, evidently parent trees, have since been marked, as well as three other youngsters within a small radius having in the main the characteristics of the first two. Every one of these trees appears to be of a mistletoe-resistant strain. It was decided to cut out all trees bearing mistletoe, and enough of the others to insure cross pollination between the seven resistant trees. Within ten years Mr. Bates hopes to obtain an appreciable amount of seed of the resistant strain with which to make further tests for immunity.

Old Cedar Saved

Towering two hundred feet in the air, with an age of some 2,300 summers and a circumference of 58.6 feet a yard from the ground, a noble cedar near North Bend in the State of Washington faced the executioner's axe. Sturdily it had outlived three complete generations of forest growth and still shows no sign of arboreal senility. To its defense rallied the citizenship at the behests of the Washington Natural Parks Association. By public subscription $1,800 was raised, and a plot containing this tree and eighteen other cedars has been preserved.

GIVE NATURE MAGAZINE AS A BIRTHDAY PRESENT

Wohlert's Flowering Trees

Japanese flowering cherries
Chinese flowering crabs

A. E. WOHLERT
"The Garden Nurseries"
Narberth Pa.

America's Finest Collection

Order one of these Special Assortments NOW

SPOTTED about the lawn, in shrubbery or as a screen or windbreak, Oriental Flowering Crabs cannot be surpassed. The beauty of the early spring blooms is a delight. The following assortments are for immediate sale.

$25 Assortment [Trees 2 to 3 feet high]

1 Crab Floribunda Purpurea, purple	$1.75
1 Crab Atrosanguinea Ming Shing, sgl. red	2.00
1 Crab Arnoldiana, semi-dbl. pink	2.25
1 Crab Baccata, sgl. white, fragrant	2.00
1 Crab Bechteli, dbl. pink, fragrant	4.00
1 Crab Scheideckeri, dbl. pink	2.00
1 Crab Sargenti, dwf. white, red fruit	3.00
1 Crab Ioensis, sgl. pink, fragrant	2.00
1 Crab Floribunda, sgl. pink, early	2.00
1 Japanese Weeping Cherry, sgl. pink	4.00
	$25.00
Same asst. as above, trees 3 to 4 ft. high	$34.75

$15 Assortment [Trees 2 to 3 feet high]

1 Crab Niedswetzkyana, prpl. fol. and fls.	$2.00
1 Crab Atrosanguinea Ming Shing, sgl. red	2.00
1 Crab Parkmani, semi-double, pink, dwf.	3.00
1 Crab Prunifolia Rinki, Chinese Apple	1.50
1 Crab Scheideckeri, dbl. pink	2.00
1 Crab Eleyi, purple to red—new	2.50
1 Crab Ioensis, sgl. pink, fragrant	2.00
	$15.00
Same asst. as above, trees 3 to 4 ft. high	$21.50

These trees may be ordered in any combinations at the above prices. If larger trees are wanted, send for catalog.

A. E. WOHLERT
"The Garden Nurseries"
227 MONTGOMERY AVENUE
NARBERTH, MONTGOMERY CO., PA.

Vaughan's Dahlia Flowered ZINNIA

A new flower. Its giant size, rare art colors and velvety texture, make it the most gorgeous of annuals. A new race; very sturdy; bearing freely, flowers of unrivaled beauty. Our special mixture includes eight different varieties, a wonderful addition to your garden, which we will send for 10c with a copy of our 1926

Vaughan's Gardening Illustrated

This is a seed catalog unlike others, a magazine of home gardening information, as well as a complete list with pictures, prices and descriptions of everything a home gardener desires or needs. It contains

NINETY COLORED PLATES

The most complete collection of correct illustrations of annual flowers in true colors, ever published in an American seed catalog. It lists the finest standard home garden vegetables, and the best of new introductions. It gives all the news of the gardening world, and practical advice for the cultivation of everything listed. Send 10 cents to the nearest address below for a generous packet of Vaughan's Dahlia Flowered Zinnia Mixture; or Vaughan's Annual Statice Mixture—our 1925 feature; or Vaughan's Marigold Josephine—our introduction of 1924 (one packet of each for 30 cents) — and **Vaughan's 1926 Gardening Illustrated** will be sent with seed or mailed alone, FREE.

VAUGHAN'S SEED STORE, Dept. 78
47-49 Barclay Street, New York City
10-12 W. Randolph Street, Chicago

GROW CALIFORNIA HOLLY
Toyon or Christmas Berries

A beautiful spreading evergreen with bright red berries. Grows readily from seed.

Seed, per package, 25c

HAZEL O. ARMSTRONG, Gilroy, Calif.

Resourceful Gull

By J. Crow

In Newport, Oregon, the gulls have the habit of flocking wherever scraps of food are thrown, gull sentinels apparently being stationed here and there to acquaint the "gang" of the tidbits. They have voracious appetites and bolt their food with little regard for its size or digestibility. They pounce upon it with loud outcries, making the beach or our dooryards places of noise and confusion for the time being. One day, deciding to have a bit of fun with a cocky, domineering old fellow, who needed to be taken down a peg or two, I tied a piece of gristle at the end of a long string and threw it in his direction. Just as I had hoped, he swallowed it greedily and with numerous gulps endeavored to get the string down also. Failing in that, he brought the meat up with contortions and for a moment looked at it ruefully, scratching his head in evident perplexity, for have the gristle he must. Then, would you believe it, didn't the resourceful old rogue, with a look of triumph and cunning, deliberately commence swallowing the string first, the weight at the end seeming to facilitate the process. Then by easy installments the string disappeared and the much coveted treasure went following after.

A Redwood Tract

Plans are taking definite form looking to the creation of a reservation covering between 10,000 and 12,000 acres of redwood forest, according to an announcement of the Save the Redwoods League. This would be a tract considerably larger than any of those thus far set aside and would include the gorgeous stand of redwoods at Dyerville in Humboldt County, California. The tract would have a valuation of several millions of dollars, toward which three-quarters of a million have been contributed.

An Exception

Undoubtedly the exception proves the rule, writes Mrs. Fred H. Pitman, of Winthrop, Me., commenting on the shrub article that stated that poisonous and nonpoisonous sumacs would not be found growing side by side. She reports an instance of a corner of a V-shaped pasture that borders the Old Post Road in North Attleboro, Mass., where both were found close beside each other. She adds that the cows pastured in the tract had eaten the leaves from the nonpoisonous sumac but left the other untouched.

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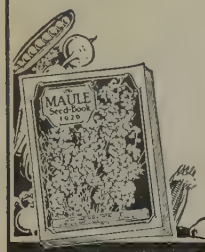

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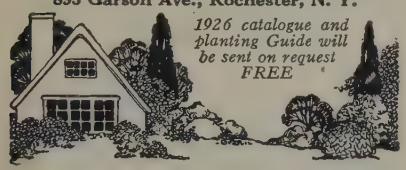

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Guaranteed Stock

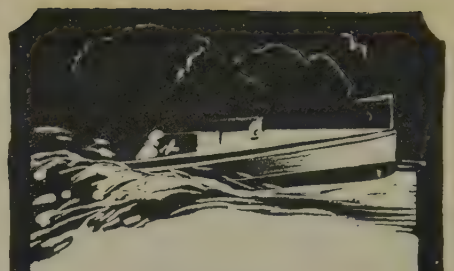
Drastic but salutary steps have been taken in Michigan to insure quality as represented in nursery stock. Provision is now made for inspection, under the supervision of the Bureau of Agricultural Industries, of the growing stock with a view to the eradication of diseased material. In addition to this careful check thorough inspection is to be made during the coming shipping season of all nursery stock shipped out of the state to ascertain whether it is true to name. This move is taken to protect the interests of the careful nurserymen as opposed to the occasional unscrupulous dealer.

A Church Forest

During the next three years thirty thousand forest trees will be planted on the church forest belonging to the Sacred Heart Slovak Church in Wilkes-Barre, Pa. The church owns forty acres of land, twenty-five of which will be put to work as a model forest. Not only will revenue be realized from this acreage, but it will serve as a recreational area. It is planned to teach the children of the parish the fundamentals of forestry as well. Nothing could be sounder in assuring the permanence of the work of the church—any church—than a profitable forestry investment like this.

Placing the Blame

Once more the importance of the forest is brought home to us in a word that comes out of France blaming Americans for the floodings of the Seine River at the expense of farm crops and other devastations. It is said that Americans, having cut away most of their own hardwoods, have come to France for chestnut trees. Many, the story goes, have been cut



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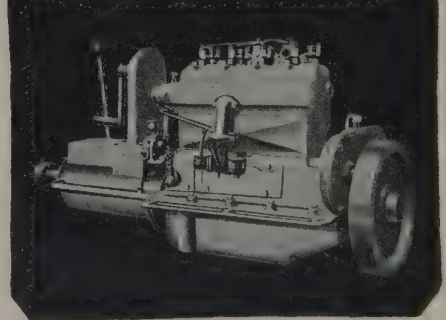

and are being shipped out. The cutting has denuded watersheds and loosed the waters, filling the Seine to overflowing, we are told. It has, the story adds, removed windbreaks, seriously affecting the climate of Paris by allowing winds from Switzerland and the North Sea to sweep down unchecked.

Nature Poetry Contest

Announcement is made by the Chattanooga Writers' Club of the award of the prizes for Nature poems submitted in the contest established by Robert Sparks Walker as a memorial to his wife, Elberta Clark Walker. First prize went to Miss Mary E. Townes, of Denver, Colo., for her poem "The Hummingbird," and second prize to Mrs. Wellington Barnes, Chattanooga, Tenn., for a poem, "Spring Is a Nomad." There were 326 poems entered from all parts of the United States, and from Japan and Canada. Contestants included a chief of police in Michigan and an eleven-year-old girl poetess in Brooklyn, N. Y. The contest is annual and rules for 1926 will soon be announced.

Man-o'-War Bird Story

After reading the article on the Man-o'-War Bird in NATURE MAGAZINE, writes Dr. E. E. Beeman, from Coral Gables, Fla., "I had the bird brought before my attention again yesterday." A party had gone to lunch on the beach and otherwise to enjoy the much-advertised Florida sun. A Man-o'-War Bird was seen about one hundred feet away. The fisherman with the party called, "Watch me get him." He cast and caught the bird in the right leg, causing it to drop the fish it was carrying. The novel catch was reeled in and examined with great interest. Uninjured the bird flew away again after its brief, forced visit. Dr. Beeman says that he has never before seen a bird so caught in years of travel. Neither have we.

Fish On the Air

The New York Aquarium announces that the long and exceedingly popular series of radio talks given from Station WEAF on alternate Fridays since June, 1925, by Miss Ida M. Mellen, assistant to the Director of the Aquarium, will be repeated during 1926 in response to numerous requests. Miss Mellen will be heard on goldfishes and the care of fishes in captivity, whales and porpoises, sea birds at the Aquarium, seals and sea cows.

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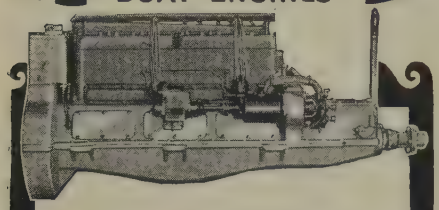

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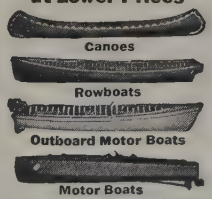

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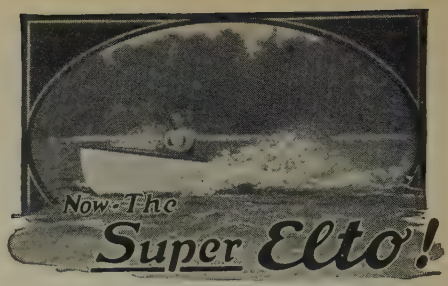

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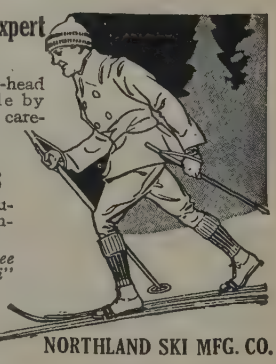

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Bulb Quarantine

The restrictions on the entry of narcissus bulbs authorized by Secretary of Agriculture Wallace three years ago went into effect as scheduled on January 1 without modification. Other bulbs to which the restrictions were to apply will be permitted entry under permit and inspection pending further investigation. This decision is announced by Secretary Jardine after careful consideration of the situation in the light of evidence submitted at the conference held at Washington in November.

In commenting on his action, the secretary said the information available in 1922 on the entry of pests on these bulbs undoubtedly justified fully the placing of the restrictions, and that the facts obtained since that time have emphasized the menace to agriculture then indicated.

"It is unfortunate," he said, "that in protecting our various crops against pests and diseases some interests must suffer. The evidence shows the danger to be such, however, that I feel no one charged with the safeguarding of American agriculture could do other than restrict the entry of these bulbs. I do not doubt the sincerity of those who have reached other conclusions, and I have considered their arguments carefully, but the weight of evidence seems to me to rest in favor of retention of the restrictions.

"The evidence available at present indicates that none of the three important pests usually assocated with the imported narcissus bulbs has yet become so well established in the country as to make control measures useless. A review of the present situation indicates that even in the districts where they have gained a foothold they may be materially controlled and possibly eradicated, especially in the case of the two bulb flies. We are going to give these districts a chance to clean up. They have promised to do so and the department will insist that this be done at the earliest date possible.

"With respect to the two bulb flies, their establishment even on the Pacific coast is far from being general. Taking the plantings as a whole the percentage of infestation does not amount to more than a fraction of 1 per cent. In the eastern section of the United States the infestation by the lesser bulb fly is still comparatively trivial, and there seems to be no clear record in this section of establishment of the larger bulb fly. At least, it is evident that large-producing areas in the eastern United States—some of them going back to Colonial days—are altogether free from these pests. It would appear that these regions have a right to protection from them.

"The lesser bulb fly is an important

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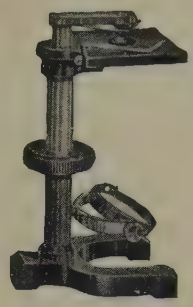

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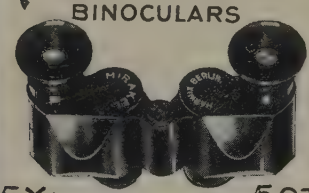

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onion pest. In the Pacific Northwest it has already occasioned serious damage in onion plantings. It is important to note that it has not yet reached our chief areas of onion production. Producers in these areas, as well as all other onion producers in the United States, have a right to protection from this hazard.

"There is no question as to the seriousness of the eelworm menace to our alfalfa and clover crops. They have been attacked in certain regions, but the evidence indicates that most of the United States is still free from this pest.

"Of great importance, also, is the possibility of casual or accidental entry with narcissus bulbs of insect pests which may have little or no economic relation to the bulb industry, but may carry a serious menace to other farm crops. For example, some 70 different insects have been intercepted with importations of narcissus bulbs alone, and among these are such well-known injurious pests as the European earwig, already established and proving to be very troublesome in Rhode Island and in the State of Washington, and also various wireworms very destructive to cereals and other crops in Europe.

"The public is naturally interested in the question of the immediate or future availability of the narcissus bulbs. It was brought out at the conference that there are now planted and growing in the United States some 150,000,000 of these bulbs, nearly double the quantity which is normally imported. Furthermore, the needs for this winter's forcing and next year's planting have already been met by importations of this year which much exceed those of any previous year. There seems, therefore, no justification for a material increase in price."

The retention of the restrictions on the entry of narcissus bulbs, the secretary pointed out in answer to charges that the Department of Agriculture had been actuated by motives of trade protection, is based exclusively on evidence of insect danger to agriculture and horticulture.

"The Plant Quarantine Act," he commented, "is being administered and will continue to be administered solely for protection against insects and diseases and in no sense as a subterfuge for trade portection. It is true, as has been often declared, that there is a narcissus bulb industry in this country, part of it dating from colonial times, part of it established since the regulations were announced, and that the restrictions on bulb entry may, temporarily at least, benefit this industry. This fact, however, cannot be considered one way or the other in administering the law."

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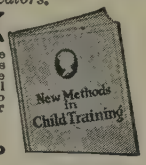

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The restrictions on the entry of eight other classes of bulbs transferred from the restricted to the free list in 1922 for a three-year period have been postponed by order of the secretary to give more opportunity to determine the risk in connection with their entry. Such entry will, therefore, continue to be permitted under permit, but these bulbs will be subject to inspection and the enforcement of such additional safeguards as may be found necessary. The volume of entry of these classes is relatively small and the inspection which it has been possible to make of them has not disclosed a risk which would seem to warrant the enforcement of the restrictions at this time.

These eight classes are: Chionodoxa (glory-of-the-snow), Galanthus (snowdrop), Scilla (squill), *Fritillaria imperialis* (crown imperial), *Fritillaria meleagris* (guineahen-flower), Muscari (grape hyacinth), Ixia, Eranthis (winter aconite).

Using Peat Bogs

At the urging of a large owner of drained peat land in the Upper Peninsula of Michigan, the Lake States Forest Experiment Station is now working out plans for a cooperative experiment in reforestation on these and other swamp lands in the Lake States, in which the Michigan Agricultural College and the University of Wisconsin have stated their willingness to take part.

The large tracts in question were drained not long ago for farming land, but proved a failure and are now lying idle. Tree planting on peat lands, which would put these areas in use and at the same time remove the great fire menace of the present peat fields, is a new venture in this country, according to Director Raphael Zon of the experiment station, but it has already received considerable attention in Europe. The proposed study by this research unit of the Forest Service, United States Department of Agriculture, is expected to contribute valuable information to the general subject of swamp forests, which the station has for some time been studying in various part of the Lake States region.

Wrong Initials Given

Through inadvertence the middle initial E was used instead of the initial H in the bird house advertisement of Joseph H. Dodson on the fourth cover of NATURE MAGAZINE for December. Before the mistake was discovered and corrected several thousand copies had been run.

NATURE MAGAZINE IS A GIFT THE YEAR ROUND

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Flicker	Wood Thrush
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Questions and Answers

The American Nature Association will be glad to answer each month such questions as its members ask about Nature.

QUESTION: *Can you tell me something about the llama and alpaca?*—E. P.

ANSWER: The llama and alpaca are domestic animals derived long ago from the wild guanaco, which still exists in a wild state in the mountainous parts of Peru and Bolivia. The llama has been developed mainly as a beast of burden and the alpaca as a source of wool.

QUESTION: *Where does the American mistletoe grow?*—C. E. S.

ANSWER: The American mistletoe (*Phoradendron flavescens*) is a parasite growing on various species of deciduous-leaved tree from New Jersey, Ohio, and Indiana, south to Florida and Texas. Its roots find lodgment in the bark of its host, from which it receives nourishment.

QUESTION: *Just what is the snowshoe rabbit?*—E. M.

ANSWER: The snowshoe rabbit is one of the names for the varying hare, so called because it changes in winter from brown to white. It is called snowshoe from its large hind feet with spreading toes, which enable it to travel on soft snow.

QUESTION: *Why does the squirrel pet we have whirl a nut around in its mouth with its paws?*—H. A. H.

ANSWER: We believe that the squirrel turns the nut around with its paws for two reasons. When about to eat one he turns it in order to find the place where it is easiest to pierce the shell; also he detects in this way any crack or hole and if he finds one will almost invariably eat it at once. If, however, he finds it perfect, and does not need it just then, he hides it for future reference.

QUESTION: *Does the western water ouzel really swim both under and on top of the water?*—L. W. T.

ANSWER: The water ouzel swims readily, but mainly under water and propels itself almost entirely by its wings. That is, it flies beneath the water.

QUESTION: *Our biology class has a horned toad as a pet but we do not know what to feed it. Also we would like to know something more about it.*—D. L. N.

ANSWER: The most common food of horned toads seems to be ants. It is likely, however, that your pet will eat meal worms and probably other insects. Most species of horned toads bring forth their young alive, a dozen or more. At least one lays eggs. These are about twenty-four in number and are laid in early summer in a burrow a

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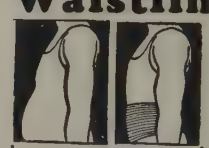

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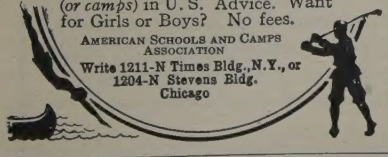

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few inches deep dug in a sloping bank of earth. The eggs are arranged in layers each smoothly covered with earth. They hatch in forty days. The young are smooth and weak at first, but soon gain strength and activity. The old ones give little or no care to the young.

QUESTION: *Do snakes ever scream when dying?*—H. M. S.

ANSWER: We have been unable to find any evidence that snakes scream. So far as we know hissing and blowing are the only vocal sounds made by this class of reptiles.

QUESTION: *The Bible, in Leviticus, Chapter 11, verses 5 and 6, classes the "coney" and the "hare" as ruminants, cud-chewing animals. Do the present-day biologists class them as such?*—D. R. H.

ANSWER: The "coney" referred to in Leviticus and also in Proverbs xxx, 26, is supposed to be the Syrian Hyrax or Daman. Its Latin name is *Hyrax syriacus.* Its systematic position was long in doubt, since with the general form of a rodent, it has molar teeth like those of the rhinoceros, and is peculiar in many other respects. It is now considered to belong to an order by itself. The ancients had therefore some justification in classing it with the ruminants, though needless to say neither the hyrax nor the hare are provided with the type of stomach needed by animals that chew the cud.

QUESTION: *What is the difference between fruit and vegetables?*—O. H.

ANSWER: In a botanical sense the product of a seed, whether edible or not, is a fruit. In some countries, melons, tomatoes and similar edible products of herbaceous plants are called fruits. American usage, however, tends to call such products vegetables, in common with such food products as onions, potatoes, kale, cabbage, etc., and to confine the term fruit to (1) orchard fruits—apples, cherries, etc.; (2) those of vines—such as grapes; (3) those of shrubs, as blueberries, raspberries, other small fruits and the strawberry.

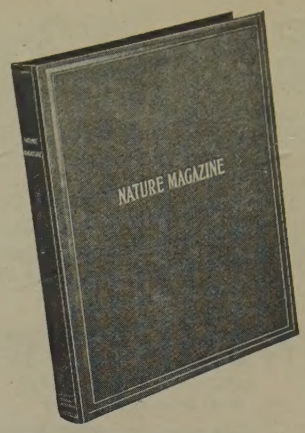
QUESTION: *What is the largest frog and where is it found?*—M. E.

ANSWER: The Goliath Frog of Africa, a species considerably larger than our largest bull frogs, is supposed to be the largest frog in the world.

QUESTION: *I was told that a certain dog died because it bit a toad. Is this possible?* —M. E.

ANSWER: Our common toads secrete a bitter substance which is very distasteful to animals, but it is not known to cause death if swallowed. Similar secretions of certain toads and frogs, however, are deadly if introduced into the circulatory system, and are used by certain native tribes to poison arrows.

NOTE: Mrs. A. E. Mathers of Middleboro, Mass., sends suggestions for feeding turtles in response to the inquiry of G. S. H., Jr., in the October issue. Mrs. Mathers has found her young snapping turtles and painted terrapins fond of finely minced raw beef, canned salmon or any cooked fish.



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February

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February

"THE TREE PLANTING ARMY"

1926 SEMI-CENTENNIAL OF FORESTRY

To mark 1926, the semi-centennial of the first step in forestry of the United States Government, the American Tree Association announces the publication of the "Forestry Primer." The Primer recites the facts of the forestry situation and is designed for school and club use, and also is for distributions to Women's Clubs, Civic and Commercial Organizations. The Association from its headquarters in Washington will send, for a three-cent stamp to pay postage, the booklet to organizations and committees having forestry educational programs under way.

The Primer contains 32 pages with a foreword by Charles Lathrop Pack, the president of the American Tree Association, and comments on the importance of the study of the forestry question by John J. Tigert, United States Commissioner of Education; Mrs. John D. Sherman, president of the General Federation of Women's Clubs; and Prof. E. Laurence Palmer, of Cornell, who directs the Nature Study Department in NATURE MAGAZINE.

The Primer sets forth the important figures that show just how great a part forest products play in our economic scheme.

In his foreword, Mr. Pack uses a unique title for the page which is "1876–1926–1976." This immediately prompts a query in the reader's mind and it points out how Franklin B. Hough was put to work fifty years ago by the U. S. Government to inquire into forestry conditions. In the foreword Mr. Pack writes:

"This forestry primer is published to mark the completion of the fifty years since the United States Government took the first step in forestry. In 1876 Dr. Franklin B. Hough was appointed a special agent to inquire into forest conditions. The date 1876 is destined to be an important one in forestry history. Just as 1876 marked the centennial of our political independence, so it will mark the beginning of our economic independence when the forestry history of this country is written.

"But I prefer to look ahead another fifty years to 1976 when there will be a forestry centennial in the same year that our country marks the two hundredth anniversary of its political independence. Will this country have advanced toward economic independence in a forestry sense? I believe the American people will bring about that situation. I believe the fine cooperation given the educational campaigns of the American Tree Association by the newspaper and magazine editors will, long before that date, have aroused the public to demand a timber crop every year on our thousands of acres of idle land, as a well-ordered project of public policy. Then the date, 1876, will indeed have become an important one in economic annals.

"Can the American people be brought to look ahead through economic glasses and see the mounting cost of living caused by our dwindling forest resources? Those resources are moving farther and farther away from the centers of greatest consumption, the great population centers of the East.

"This Forestry Primer aims not only to mark a date, but aims to direct the public opinion of tomorrow to the great importance to our economic structure, of that corner-stone of our country's economic safety—FORESTS."

To turn public thought to the importance of a tree crop every year, just as we have other crops, is the object of the American Tree Association. Counting use in thousands of ways, together with destruction by insects and forest fires, our forests' resourses are being depleted about four and one-half times faster than the forest areas are being regrown.

A timber crop every year much closer to the sections of greatest consumption—the manufacturing centers—is another term for a national forest policy, for that timber crop is what a national forest policy would create.

To bring this about, the American Tree Association is enlisting the interest of hundreds of thousands in trees. To join this organization you have only to plant a tree and register it with the Association at Washington. There are no dues.

The Association has for free distribution, for a stamp for postage, tree-planting instructions, bulletins on town forests, and outlines on what your state must do to gain the cooperation of the Federal Government under the existing forestry laws.

History of U. S. Forestry

In 1876, a special agent was appointed by the Department of Agriculture to study the forestry conditions in the United States. The seed of conservation was sown even in Colonial days. William Penn's requirement that one acre of forest be left for every five cleared, and Connecticut's ordinance that timber should not be taken out of the township, on the ground that it would be prejudicial to the public welfare, were early attempts to check prodigal use of this resource.

Congress appropriated $200,000 in 1799 to buy a forest reserve containing timber for ships, and in 1827, an attempt was made to grow live oak for this purpose. Several states began to look to their timber assets and in 1873, Congress passed the Timber Culture Act.

Ineffective though it was, the law sought to encourage forestation by allowing a patent of 160 acres of the public domain to any settler planting and keeping up forty acres of timber in treeless sections. It is to call attention to the great work still to be done that Mr. Pack publishes the Forestry Primer, which will be sent for a three-cent stamp for postage. It is the supreme effort of his educational campaigns to get forestry facts before schools, civic organizations and women's clubs in plain phrases.

In 1886, the Division of Forestry was created in the Department of Agriculture. For several years it was limited to an informational capacity by annual appropriations never exceeding $30,000. Gradually the field work was expanded until in 1901, the division became the Bureau of Forestry. Four years later it became the Forest Service and its appropriation for the year of 1924 was $12,731,869.

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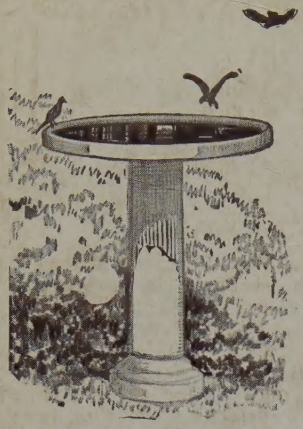

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